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GOVERNMENT CERTIFICATION OF STALLIONS.

SIXTH ANNUAL REPORT (SEASON 1912) ON THE VETERINARY EXAMINATION OF STALLIONS FOR THE GOVERNMENT CERTIFICATE OF SOUNDNESS AND APPROVAL.

By W. A. N. Robertson, B.V.Sc.

In introducing this, the Sixth Annual Report of the scheme for examination and certification of stallions, it is worth noting the large *increase in the number of stallions, particularly of the draught type*, introduced into Victoria during the year from the United Kingdom.

For the period ended 31st December, 1912, a total of 91 stallions was introduced. Of this number, 82 were of the draught type, 21 being Clydesdales, and 61 Shires. For the previous year a total of 53 was introduced. From New Zealand a total of 226 stallions was imported, and of these 219 were draughts. This shows a decrease of 35 as against the number imported during 1911. A greater decrease in the number of mares and geldings introduced from New Zealand occurred, the figures being 1910 head less than for the previous year. No doubt this was due in a large degree to the long continued spell of dry weather preceding the July sales, when the demand for workers was not so keen as in previous years. The increase in the importations from the United Kingdom with the decrease in the number of stallions introduced from New Zealand would appear to indicate that there is a desire on the part of breeders to improve their studs by the introduction of English and Scottish blood.

It would, I think, be wise to sound a note of warning to breeders to carefully consider the laws of breeding in order that the blood that has been introduced, and for which such fine prices have been paid, should be kept pure, and so bring the draught horse industry into such a condition that it will be necessary to import at infrequent intervals only. The system of breeding as carried out at opposite ends of the globe stands out in clear contrast, and though the many splendid horses that have been introduced into Victoria in the

past have left their mark on the industry, the colonial bred stallion does not occupy the position that his brother from oversea does, where more careful methods have been followed from generation to generation, resulting in the production of an animal that, when mated with one of similar type, clearly exemplifies the breeding law that "like begets like." The system of breeding indiscriminately from Shires and Clydesdales does not exemplify this law, except inasmuch as in general one horse is like another. In no other class of breeding stud stock are such methods followed, though crossing is at times carried out, but the original pure line of breeding is carried on at the same time so as to continue the strains from which a cross may be obtained.

During the season under review, 161 parades were held. Of this number 94 were carried out under the auspices of various Agricultural Societies, the balance being made up by examinations conducted at sales and under the regulations providing for the special examination of stallions.

EXAMINATIONS AND REJECTIONS.

The total number of stallions examined was 954. Of this number 746 received certificates and 208, or 21.8 per cent., were rejected. This is a very small decrease over the percentage rejected during the previous season.

TABLE I.

ANALYSIS OF DEFECTS OF REJECTS, SEASON 1912-13.

—	Draughts.		Light.		Ponies.		Totals.	
	Examined. 745	Certificated. 597	Examined. 139	Certificated. 106	Examined. 70	Certificated. 43	Examined. 954	Certificated. 746
	Rejected.	Per cent. Rejects.	Rejected.	Per cent. Rejects.	Rejected.	Per cent. Rejects.	Rejected.	Per cent. Rejects.
Unsoundness.								
Sidebone ..	70	9·46	...	...	...	...	70	7·38
Ringbone ..	15	2·03	3	2·16	1	1·43	19	2·00
Spavin (Bone)	3	·4	8	5·76	...	...	11	1·16
Bog Spavin ..	...	...		...	..	...	...	...
Curb ..	1	·13	8	5·76	1	1·43	10	1·05
Roaring ..	..	...	...	...	...	...		...
Shivering ..	...	...	...	...	...	...	...	...
Nasal Disease	..	...		..	...	...	...	...
Total unsound	89	12·03	19	13·67	2	2·85	110	11·59
Disapproved	59	7 92	14	10·07	25	35·71	98	10·27
Total rejected	148	19.73	33	23·74	27	38·57	208	21·8

Taking the different breeds and comparing with the work done in 1911-12, the number of draught horses rejected was practically the same, though the reasons for such rejections vary, there being an increase of 1 per cent. rejected on account of the hereditary unsoundness, sidebone, which is counterbalanced by the fact that no horses were rejected for bog spavin, roaring, or shivering. Of the

light horses, a total of 23.74 per cent. was rejected, a decrease of 2.92 per cent. in respect of the number the previous season. As regards the reasons for rejection, there was an increase of 5.80 per cent. in respect of unsoundness, and a decrease of 8.7 per cent. in respect of disapproval. Of the unsoundnesses, bone spavin and curb are responsible for the increased number rejected. For ponies, fewer by 1.24 per cent. were found unsound, whilst on account of disapproval, 35.71 per cent. were refused, or an increase of 7.85 per cent.

The foregoing table shows a complete analysis of the season's operations, whilst upon page 261 is found a summary of the six years' work.

RE-EXAMINATION.

Three hundred and twenty horses which had been previously certificated were presented for re-examination. The accompanying table indicates the result of such examination.

HORSES SUBMITTED FOR RENEWAL OF CERTIFICATE, SEASON 1912-13

Four years old.				Five years old.			
Passed.	Rejected.	Per cent.	Total.	Passed.	Rejected.	Per cent.	Total.
144	18	11·11	162	144	14	8·86	158

Total re-exams., 320; total passed, 288; total rejected, 32; percentage rejects, 10.

TRANSFERRED CERTIFICATES.

Of the 82 draught stallions which were introduced from the United Kingdom during the season, 56 presented certificates obtained in England from one or other of the societies mentioned in the regulations, and for which Victorian Government certificates are substituted.

In respect of such English certificates, however, breeders should note that it is a Victorian Government Certificate of Soundness which is required in respect of horses exhibited at shows, and that English certificates only entitle the holder to the issue of a Victorian certificate without submitting the horse for re-examination. It is, therefore, necessary that such English certificates should be presented for transfer at the earliest possible moment. Considerable trouble and frequent disappointment would then be obviated.

On occasion during the season under review some trouble occurred owing to this failure to have the certificate transferred. The same remarks apply to certificates issued in the adjoining States, but no further trouble would occur if stallion owners would realize that until a certificate is duly registered in the office of this Department and a Victorian certificate substituted, it is of no value in respect of exhibition at shows.

Attention should also be drawn once more to the fact that if a certificate is issued in New Zealand prior to 1st April in any year, it can only be transferred for a Victorian certificate expiring on the ensuing 30th June, whilst a certificate issued after that date is exchangeable for a Victorian one terminating on the 30th June, twelve months.

In addition to the number of certificates transferred for English examinations, as above, there were 54 issued in New Zealand, 11 in New South Wales, and 3 in South Australia, for which Victorian transfers were made.

ALTERATIONS TO REGULATIONS.

Experience has once more demonstrated that the regulations can be altered to a slight degree in order to facilitate the operations of the scheme. In Regulation III., clause 2, "Grounds for rejection," the words, "*Unless dealt with under the Appeal Board conditions*" have been deleted. This will permit an Appeal Board examining in respect of a stallion refused a certificate as regards type and conformation to *reject the horse for the season only, and so enable the owner to* re-submit such animal the following year for examination before a veterinary officer. Regulation II., clause 3, "Certificates," has been *amended, and in future certificates will be forwarded direct to the* owner, and not, as previously, to the secretaries of the societies under whose auspices the parades are held. Provision will be made for *secretaries of societies to be notified which, if any, of the horses sub-*mitted at such parade for examination obtain their certificate. Under Regulation V., clause 3, provision has been made for the acceptance of the certificate of the Board of Agriculture of Great Britain to be accepted as a certificate for which a Victorian Government Certificate of Soundness will be issued.

The accompanying table is an analysis of the examinations carried out by the individual officers. It will show that, as in previous years, the bulk of the work has been performed by three officers.

TABLE 4.

OFFICERS' EXAMINATIONS OF STALLIONS, SEASON 1912-13.

Officer.	Number Examined.	Number Certificated.	Number Rejected.	Percentage Rejected.
Mr. E. A. Kendall, B.V.Sc.	393	304	89	22·64
Mr. R. G. Griffin, M.R.C.V.S. ...	227	186	41	18·06
Mr. R. N. Johnstone, B.V.Sc. ...	296	226	70	23·65
Mr. G. Heslop, B.V.Sc.	22	16	6	27·27
Mr. W. J. Cother, G.M.V.C.	8	8	...	
Appeal Boards	8	6	2	25·00
Total ...	954	746	208	21·8

"APPEALS."

Since the last report eight appeals have been lodged. Two of these, however, it should be noted, were appeals in respect of stallions examined during the previous season, but in which the appeal was held too late to allow inclusion in the previous report. Of the number, five were appeals against rejection on account of being below reasonable standard in respect of type and conformation. In each case the appellant was successful, and a certificate was issued. In the remaining three appeals, which were in respect of unsoundness, the Board upheld the Veterinary Officer's decision in two cases and reversed the decision, and recommended the issue of a certificate in one.

SUMMARY OF SIX YEARS' WORK, 1907-1913.

Season.	Draughts. Examined.	Draughts. Certificated.	Draughts. Rejected.		Draughts. Percentage.	Lights. Examined.	Lights. Certificated.	Lights. Rejected.		Lights. Percentage.	Ponies. Examined.	Ponies. Certificated.	Ponies. Rejected.		Ponies. Percentage.	Totals. Examined.	Totals. Certificated.	Totals. Rejected.		Totals. Percentage.
1907–8 ..	403	271	Unsound	96	23·82	301	246	Unsound	32	10·63	214	186	Unsound	10	4·67	918	703	Unsound ..	138	15·04
			Disapproved	36	8·93			Disapproved	23	7·64			Disapproved	18	8·41			Disapproved	77	8·38
				132	32·75				55	18·27				28	13·08				215	23·42
1908–9 ..	501	341	Unsound	137	27·33	295	242	Unsound	29	9·83	199	159	Unsound	5	2·5	995	742	Unsound ..	171	17·17
			Disapproved	23	4·59			Disapproved	24	8·13			Disapproved	35	17·58			Disapproved	82	8·24
				160	31·92				53	17·96				40	20·10				253	25·41
1909–10 ..	410	275	Unsound	96	23·52	191	147	Unsound	12	6·27	156	112	Unsound	5	3·29	757	534	Unsound ..	113	15·04
			Disapproved	39	9·56			Disapproved	32	16·77			Disapproved	39	25·65			Disapproved	110	14·65
				135	33·08				44	23·04				44	28·94				223	29·69
1910–11 ..	542	387	Unsound	117	21·57	143	108	Unsound	15	10·53	128	101	Unsound	7	5·47	813	596	Unsound ..	139	17·09
			Disapproved	38	7·01			Disapproved	20	14·08			Disapproved	20	15·62			Disapproved	78	9·6
				155	28·58				35	24·61				27	21·09				217	26·69
1911–12 ..	692	554	Unsound	84	12·13	165	120	Unsound	13	7·87	122	83	Unsound	5	4·09	979	758	Unsound ..	102	10·42
			Disapproved	54	7·8			Disapproved	31	18·78			Disapproved	34	27·86			Disapproved	119	12·15
				138	19·94				44	26·66				39	31·96				221	22·57
1912–13 ..	745	597	Unsound	89	12·03	139	106	Unsound	19	13·67	70	43	Unsound	2	2·85	954	746	Unsound ..	110	11·59
			Disapproved	59	7·92			Disapproved	14	10·07			Disapproved	25	35·71			Disapproved	98	10·27
				148	19·73				33	23·74				27	38·57				208	21·81

REGULATIONS

GOVERNING THE EXAMINATION OF STALLIONS FOR THE GOVERNMENT CERTIFICATE OF SOUNDNESS AND APPROVAL.

I.—EXAMINATION PARADES.

(1) Societies within whose district an Inspection Parade is appointed are required to provide a suitable place for the examinations to be conducted, and to suitably and reasonably advertise the holding of the parade on receipt of notice from the Department of the fixture. The secretary or some member of the committee of the society is required to be in attendance at the appointed time to assist the examining officer in the arrangements for the inspection.

(2) The Parades will be conducted and the Veterinary Officer will attend without expense to Societies other than that involved in advertising and making known the occasion to the public and the Stallion owners in the district, and providing the examination ground.

(3) The Examining Officer will attend Inspection Parades held at times and places set out in the official Time Table for the year, and all examinations of Stallions for the Government Certificate will be made at such Parades or on some such publicly advertised occasion, *unless* under special circumstances as provided for in clause 5.

(4) In the event of it being found impossible for local reasons to hold the Parade in any district at the time and date set out in the Time Table, notice to that effect—together with suggestions for alternative date and time compatible with the rest of the Time Table—should be given *not later than 1st June*, after which no alteration in the Time Table can be made.

(5) The special examination of stallions for the Government Certificate of Soundness at other than the advertised stallion parades may be arranged for in cases where, through accidental circumstances, the owner has failed to submit the horse at such parade.

Such examinations will only be arranged when the attendance of the Examining Officer will not interfere with the requirements of the Department for his services in other directions.

An owner requesting such special examinations will be required to prepay a fee of £1 1s. for each horse examined; also the railway fare (first class return), and travelling expenses at the rate of 14s. per day, of the visiting officer.

II.—GROUNDS FOR REJECTION.

(1) Refusal of Certificate on the ground of unsoundnes will be made only when, in the opinion of the Examining Officer, the horse is affected at the time of examination with one or more of the following hereditary unsoundnesses in any degree, viz:—

Roaring	Curb	Thoroughpin and Bursal Enlargements
Ringbone	Bog Spavin	Nasal disease (Osteo-porosis)
Sidebone	Bone Spavin	Chorea ("Shivering" or "Nervy")

or such other hereditary unsoundness as the Minister may at any time declare. (Blemishes or unsoundness, the result—in the opinion of the Examining Officer on appearances then presented—of accident, injury, and over-strain or over-work, will not disqualify.)

(2) The Certificate will also be refused in the case of animals considered by the Examining Officer to be below a reasonable standard for Government approval, as regards type, conformation, and breeding.

(3) Stallions three or four years old, which are refused a Certificate as regards type, conformation, and breeding may be re-submitted annually until five years old, after which the refusal shall be subject to review under Part V. of these regulations only.

III.—CERTIFICATES.

(1) Particulars concerning the identity of the horse—name, breeder, pedigree, age, prior ownership, &c.—must be furnished to the Examining Officer at the time of examination. If deemed necessary in any case the owner may be called upon to furnish a statutory declaration as to the correctness of such particulars.

(2) Certificates will be issued within seven days of the holding of the Parades, and will be forwarded to the owner direct. Secretaries of Societies under whose auspices the Parade is held will be notified which, if any, of the horses submitted for examination obtain their Certificates.

(3) The owners of stallions for which a Certificate is refused will within seven days of such refusal be officially notified of the fact; the reason for such rejection will also be given.

(4) Until the issue of a Certificate, or until the publication of the official list of certificated stallions, the result of the Veterinary examination will not be communicated to any person except as herein provided or under circumstances as follow:—The Examining Officer may, on request on proper occasion, communicate to the owner or his agent—duly authorized in writing to inquire—the result of the examination. In case of refusal of the Certificate the reasons for refusal will not under any circumstances, save in legal proceedings under the direction of the Court, be communicated to any person except the owner or his agent duly authorized in writing. Secretaries of Societies, persons in charge of the horse, grooms or relatives of the owner will not be considered authorized agents for that purpose unless they deliver to the officer the owner's signed authority to receive the information.

(5) The Victorian Government Certificate of Soundness can only be issued in respect of horses three years old and over, that have been examined by a Victorian Government Veterinary Officer, or horses in respect of which any of the following certificates are produced:—

The Government Certificate of Soundness of New South Wales, Queensland, South Australia, or New Zealand.

The Veterinary Certificate of the Royal Shire Horse Society (England).

The Veterinary Certificate of Royal Agricultural Society (England).

The Veterinary Certificate of Royal Dublin Society (Ireland).

The Veterinary Certificate of Highland and Agricultural Society (Scotland).

The Veterinary Certificate of Glasgow and West of Scotland Agricultural Society.

The Veterinary Certificate of the Board of Agriculture and Fisheries (England).

Any horse which has been rejected by the Veterinary Examiners for any of the above certificates will not be eligible for examination for the Victorian Government Certificate of Soundness.

(6) The form of the Victorian Government Certificate of Soundness is as follows:—"G.R.—Department of Agriculture, Victoria. No. . Certificate of Soundness and Approval, issued for the season *(or issued for Life as the case may be)*, given in *respect of the (breed) stallion (name and description of stallion)* submitted for Government inspection by the owner *(name of owner)* at *(place of examination)* such horse having been found suitable for stud service and free from hereditary unsoundness and defects of conformation predisposing thereto on examination by *(signature of Examining Officer)* Veterinary Officer on the day of 19 .

(Signature). f .nc

Chief Veterinary Officer.

Issued by direction of the Minister of Agriculture.

(Signature).

Secretary for Agriculture."

(7) Two-year-old colts may be submitted for examination and a temporary certificate will be issued in respect of such as pass the examination. Such temporary certificate must not be taken to imply suitability for stud service or approval as regards type, nor is the issue of it intended as an indication of the likelihood of a certificate being issued when submitted for examination at a more mature age.

(8) The season in respect of Government Certificates shall be considered as opening on 1st July, stallions passing the examination any time during the three months previous to this date in New Zealand or Australia will be granted a Certificate for the season next following. *In respect of stallions examined in Great Britain examinations on or* after 1st January will be considered as examinations for the following season.

IV.—TENURE OF CERTIFICATE.

(1) Certificates issued during the season 1907 and 1908 are life certificates.

(2) Certificates issued during the season 1908 in respect of horses four years old and over are life certificates; those for three-year-olds are season certificates only, and the horse must be submitted for re-examination at four and five years before a life certificate will be issued.

(3) In 1910, and subsequently, only stallions *five* years old and

stallions will be certificated for the *season only,* and will be required to be submitted for *re*-examination each season *until five* years old, when a Life certificate will be issued.

(4) The Season certificate issued in respect of any horse must be handed to the Examining Officer at the time of re-examination or forwarded to the Chief Veterinary Officer before a subsequent Season certificate or a Life certificate will be issued.

(5) The Minister retains the right to at any time have a certificated stallion submitted for re-examination, and to withdraw the certificate, in the event of the animal being declared, to his satisfaction, unsound.

V.—BOARD OF APPEAL.

(1) Any owner of a stallion who is dissatisfied with the refusal of a Government certificate in respect of his horse may appeal against the decision to the Minister at any time within *thirty* days of the examination, under the following conditions:—

- (*a*) That the appeal be in writing and be accompanied by the lodgment of £5, such amount to be forfeited in the event of the appeal *not* being upheld, unless the Board shall for good cause otherwise direct.
- (*b*) That the appeal be accompanied by an undertaking to pay any railway fares and hotel expenses incurred by the Board of Appeal in connexion with the settlement of the appeal.
- (*c*) That, in the event of refusal having been on the ground of unsoundness, the appeal be accompanied by a certificate from a registered Veterinary Surgeon setting out that the horse has been found by him on examination since the refusal appealed against to be free from all the unsoundnesses set out in Part II. of these regulations.
- (*d*) That, in the event of refusal having been on the ground of being below standard for Government approval, the appeal be accompanied by a certificate from the President and two members of the Committee of the Society under whose auspices the parade was held, setting out that in their opinion the horse is of fit and proper type, conformation, and breeding to be approved as a stud horse.

(2) On receipt of Notice of Appeal in proper form, and with the above conditions complied with, the Minister will appoint a Board of Appeal, which shall consist of:—

- (*a*) In the case of appeals against refusal of certificate on the ground of unsoundness, the Chief Veterinary Officer and two practising Veterinary Surgeons.
- (*b*) In the case of appeals against refusal of certificate as being below standard for Government approval, the Chief Veterinary Officer and two horsemen of repute and standing.

Such Board shall act and decide on the appeal, and its decision shall be final and *not subject to review.*

(3) In the event of the appeal being allowed, refund shall be made of the deposit, and any expenses paid by the appellant under Clause 1 (*b*). Further, the Board may recommend to the Minister the allowance of such of the expenses of the appellant in supporting his appeal as it may consider reasonable under the circumstances of the case, and the Minister may, in his discretion, confirm the recommendation in whole or in part, whereupon allowance shall be made to the appellant accordingly.

(4) No stallion in respect of which a Government certificate is refused will be allowed to be re-submitted for examination except in the case of an appeal or in such case as when a three or four years old stallion has been refused on account of type as herein provided for. In the event of any rejected stallion being re-submitted for examination under another name or under such circumstances as in the opinion of the Minister are calculated to mislead the Examining Officer into the belief that the horse has not previously been examined, the owner of such rejected stallion, if proved to the satisfaction of the Minister that he is responsible for such re-submission, shall be debarred from submitting any horse for examination for such period as the Minister shall determine.

NOTICE TO SECRETARIES OF AGRICULTURAL SOCIETIES.

Section " A " of the conditions to be complied with by Agricultural Societies before being eligible for participation in the annual Government grant is as follows:—

> " *A.—That the awards of prizes in all classes for stallions, three years old and over, at the Society's Show must be subject to the possession by the exhibit of a Government certificate of soundness.*"

In order to comply with the above, the special attention of show secretaries is invited to the receiving of entries in stallion classes. No entry should be received unless at the time of entry the Government certificate is produced, or unless satisfactory evidence is given that a Government certificate is held by the owner in respect of the exhibit. The awarding of a prize card and the withholding of prize money in respect of any exhibit shall not be deemed as compliance with the condition. Care should be taken also to see that the certificate is not out of date, that is to say:—

For three-year-olds a 1913 three-year-old certificate must be held.
For four-year-olds, a 1913 four-year-old certificate must be held (the 1912 certificates are out of date).
For horses five years old and over, a life certificate must be held.

Particular attention is directed to the method now in vogue of classifying certificated stallions. The list is now divided into horses carrying a life certificate and those which are terminable, and supplementary lists will be issued annually which should be added to those listed in Bulletin No. 30 and No. 17 (New Series).

Secretaries are strongly urged to become familiar with the regulations, particularly Regulation IV., which deals with the tenure of certificates.

Secretaries are required to forward immediately after the show a return (forms for which will be sent to each society) giving required particulars concerning 1st, 2nd, and 3rd prize winners as under:—

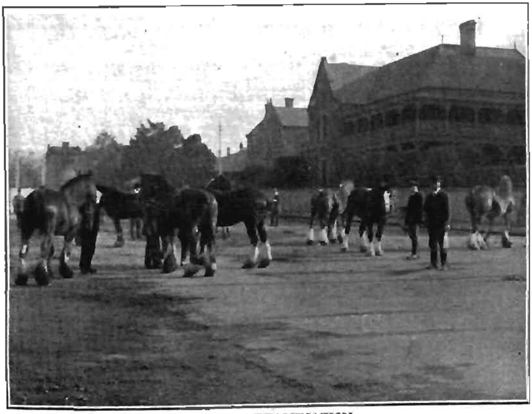
RETURN to be forwarded to the Chief Veterinary Officer concerning Stallions (three years old and over) awarded Prizes at the .... Agricultural Society's Show held ....

Name of Stallion.	Certificate Number.	Name of Class and Section (not Number).	Prize Awarded.			Owner's Name.	Owner's Address.
			1st.	2nd.	3rd.		

(Signed) ....

Secretary .... Agricultural Society.

Date ....



STALLION EXAMINATION.

SUPPLEMENTARY LIST OF LIFE CERTIFICATED STALLIONS.

Cert. No.	Name of Horse.	Age.	Owner.	Parade.	Date of Examination.	Officer.
			DRAUGHTS.			
2192	Abbotsford	5 years	A. Cameron	Newmarket	22.7.12	R.G.
2193	Abbotsford's Pride	5 years	H. J. Kortum	Newmarket	22.7.12	R.N.J.
2328	Admiral Sperry	5 years	H. S. Gibson	Traralgon	11.9.12	R.G.
2256	Agate	5 years	J. Caffrey	Dimboola	16.8.12	E.A.K.
2338	Aitken Chief	5 years	E. Cuthbert	Camperdown	11.9.12	E.A.K.
2212	Arawa	6 years	Jas. Hamilton	Bendigo Special	1.8.12	R.G.
2155	*Archives*	5 years	*J. O'Keefe*	*English Exam.*	15.2.12	..
2150	Auchencruive	5 years	J. R. McKenzie	Scottish Exam.	30.12.11	..
2266	Balmoral	Aged	A. Henman	Rainbow	6.8.12	R.G.
2162	*Balnakill*	*5 years*	*Robertson and McKenzie*	*Newmarket (Special Exam.)*	*6.5.12*	E.A.K.
2156	Bardon Masterpiece	5 years	F. W. Griffin	English Exam.	29.2.12	..
2180	Bardon Napoleon	5 years	W. Price-Jones	Newmarket (Special Exam.)	28.6.12	E.A.K.
2306	Baron	5 years	Craven Bros.	Shepparton	23.8.12	E.A.K.
2274	Baron Bombay	5 years	Shields Bros.	Dookie	19.8.12	R.N.J.
2379	Baron Bute	5 years	G. Chirnside	Werribee (Special)	6.3.13	R.G.
2168	Baron Craigie	5 years	Mitchell and O'Brien	City Horse Bazaar	18.6.12	R.G.
2267	Baron Irvine	5 years	C. H. Perkins	Rainbow	6.8.12	R.G.
2331	Baron McLeod	5 years	R. Kerr	Lillydale	13.9.12	R.G.
2185	Baron McNair	5 years	A. E. Bowman	City Horse Bazaar	15.7.12	R.N.J.
2324	Baron's Best	5 years	J. Glenn	Royal Show	3.9.12	E.A.K.
2366	Baron's Chief	5 years	H. McNab	Morwell	1.10.12	R.N.J.
2175	Baron's Pride	5 years	John Petrie, jun.	Horsham	3.7.12	R.N.J.
2203	*Barossa II.*	*5 years*	*J. Gilmour*	*Sea Lake*	*17.7.12*	*G.H.*
2166	Biddulph Bondsman	5 years	G. Smith	Newmarket (Special)	17.6.12	E.A.K.
2263	Blue Bell	5 years	*H. Collins*	*Minyip*	9.8.12	R.G.
2268	Bonnie Ben	6 years	C. J. Liesfield	Rainbow	6.8.12	R.G.
2287	Bonnie Scott	5 years	Miss Henty	Casterton	21.8.12	R.G.
2171	Bramhope Forester	Aged	A. and J. H. Young	Horsham	2.7.12	R.N.J.
2151	Branton Goldsmith	5 years	J. R. McKenzie	Scottish Exam.	3.1.12	..
2152	British Consul	5 years	J. Weir	Scottish Exam.	3.1.12	..
2336	British Leader	5 years	W. Underwood	Colac	13.9.12	E.A.K.
2377	Brydon	5 years	Jas. Lawson	Binginwarri (Special Exam.)	5.12.12	R.N.J.
2254	Cairnbrogie Stamp	5 years	Joseph Birns	Nhill	14.8.12	E.A.K.
2246	Casabianca	Aged	H. Galloway	Maryborough	12.8.12	R.N.J.
2161	Casabianca Again	5 years	J. R. McKenzie	Scottish Exam.	29.6.11	..
2343	*Channel Flight*	5 years	*P. Fraser*	*Ballarat*	14.9.12	R.N.J.
2238	Charmer Junior	5 years	MacKenzie Bros.	Rainbow	7.8.12	G.H.
2278	Clumber Baronet	5 years	Bedwell and *Cobbledick*	Numurkah	23.8.12	R.N.J.
2240	Clyde Boy	5 years	Walder and Sons	Watchem	8.8.12	R.N.J.
2323	Crown Derby	5 years	W. S. Graham	Echuca	21.8.12	E.A.K.
2356	*Crown Prince*	5 years	A. Simon	Tallangatta	23.9.12	R.N.J.
2294	Cumloden	5 years	J. Crawford	Rochester	20.8.12	E.A.K.
2352	Dainty Davie	5 years	J. Low	Korumburra	18.9.12	R.G.
2243	Dalmuir Prince II.	5 years	J. Carroll, jun.	Birchip	9.8.12	R.N.J.
2194	Dominion Chief	5 years	M. Rocks	Newmarket	22.7.12	R.G.
2279	Dreadnought	5 years	F. Metherall	Numurkah	23.8.12	R.N.J.
2167	Dreadnought	5 years	M. J. Caffrey	Newmarket (Special)	17.6.12	E.A.K.
2302	Drum Laddie	5 years	C. R. Roper	Kyabram	22.8.12	E.A.K.
2316	Drummer	5 years	Anderson Bros.	Royal Show	2.9.12	R.G.
2368	Dundonald	6 years	Gibson Bros.	Omeo	9.10.12	E.A.K.
2255	Earl of Newton	5 years	Blythman Bros.	Nhill	14.8.12	E.A.K.
2284	Enfield	5 years	A. S. Browis	Hamilton	22.8.12	R.G.
2225	*Federal Laddie*	*5 years*	J. Kurtzmann	Stawell	5.8.12	R.G.
..	Federal Prince	..	McDougall Bros.	New South Wales	12.7.12	..
2261	Federal Star	5 years	Colin Gardner	Wangaratta	13.8.12	R.G.
2372	*Fine View*	*5 years*	*H. C. Hateley*	*Murtoa (Special)*	*24.10.12*	E.A.K.
2303	Finstall Forest Victor	5 years	J. Archibald	Kyabram	22.8.12	E.A.K.
2358	Flash Newton	5 years	R. Watson	Diggers' Rest *(Special)*	24.9.12	E.A.K.
2258	Gay Lad	5 years	Phillips Bros.	Geelong	13.8.12	E.A.K.
2218	Glenalbyn	5 years	W. and P. Salmon	Beulah	1.8.12	E.A.K.
2298	Glengarry	5 years	A. J. Donaldson	Tatura	22.8.12	E.A.K.
2153	Good Gama	5 years	W. French	Scottish Exam.	3.1.12	..
2310	Hawton Park	5 years	T. McMillan	Mildura	27.8.12	R.N.J.

SUPPLEMENTARY LIST OF LIFE CERTIFICATED STALLIONS—*continued.*

Cert. No.	Name of Horse.	Age.	Owner.	Parade.	Date of Examination.	Officer.
			DRAUGHTS—*continued.*			
2208	Highland Boy ..	5 years	S. Cameron ..	Quambatook ..	30.7.12	R.G.
2330	Joe Horner ..	5 years	Murphy Bros. ..	Sale	12.9.12	R.G.
2378	Knight Dunmore ..	5 years	D. J. Kelleher ..	Kilmore (Special)	4.2.12	R.G.
2221	Knottingley President	5 years	Schmidt Bros. ..	Warracknabeal ..	2.8.12	E.A.K.
2196	King Jimmy ..	5 years	C. N. Byriell ..	Newmarket ..	22.7.12	E.A.K.
2269	King of the Shepherds	5 years	W. Gould ..	Rainbow ..	6.8.12	R.G.
2164	King of the Times ..	5 years	Hoy Ling ..	New Zealand Exam.	14.2.11	..
2375	Linkwood ..	5 years	R. Cairns ..	Charlton ..	14.11.12	Appeal Board
2233	Loch Albyn ..	5 years	T. Brown ..	Elmore	9.8.12	E.A.K.
2265	Loch Lomond ..	5 years	F. W. Stephen ..	Dimboola ..	16.8.12	E.A.K.
2206	Lolworth Premier II.	5 years	M. J. Caffrey ..	Agricultural Offices	27.7.12	R.G.
2355	Lord Galloway ..	5 years	R. G. Kiell ..	Corryong ..	18.9.12	R.N.J.
2319	*Lord Glencairn* ..	*5 years*	*R. Gilby* ..	*Royal Show* ..	*2.9.12*	R.G.
2250	Lord Haldon ..	5 years	N. Ramsay ..	Inglewood ..	13.8.12	R.N.J.
2300	Lord Islington ..	5 years	J. Wilson ..	Tatura	22.8.12	E.A.K.
2197	Lord Lieston ..	5 years	H. Doidge ..	Newmarket ..	22.7.12	E.A.K.
2198	Lord Lindsay ..	5 years	D. Lang ..	Newmarket ..	22.7.12	R.N.J.
2239	Lord of the Isles ..	6 years	W. D. Wallis ..	Jeparit	7.8.12	R.G.
..	Lord Trentham ..	5 years	T. Kennedy ..	New Zealand Exam.	9.3.12	..
2275	Lorryman ..	5 years	W. Grattan ..	Dookie	19.8.12	R.N.J.
2307	Major	5 years	E. Walker ..	Shepparton ..	23.8.12	E.A.K.
2297	Major Style ..	5 years	C. Hall	Echuca	21.8.12	E.A.K.
2247	Melbourne Prince ..	5 years	H. Galloway ..	Maryborough ..	12.8.12	R.N.J.
2380	Menestral Royal Harold	Aged	M. J. Caffrey ..	New Zealand Exam.	21.1.13	..
2205	Middlemarch ..	5 years	J. and M. Egan ..	Charlton ..	18.7.12	G.H.
2313	Milton's Pride ..	5 years	P. Downes ..	Yarrawonga ..	27.8.12	E.A.K.
2228	Moira Lad ..	5 years	J. W. Barton ..	Swan Hill ..	7.8.12	E.A.K.
2214	Montgomery ..	5 years	C. B. McFarlane	Hopetoun ..	30.7.12	E.A.K.
2270	Mountain Chief ..	5 years	C. J. Liesfield ..	Rainbow ..	6.8.12	R.G.
2369	Musket	Aged	J. Braid ..	Omeo	9.10.12	E.A.K.
2226	Napoleon	5 years	C. Marfleet ..	Pyramid ..	6.8.12	E.A.K.
2370	Napoleon Bonaparte	Aged	A. W. Sonter ..	Omeo	9.10.12	E.A.K.
2281	Newton's Se[illegible]on	5 years	J. Meiklejohn ..	Numurkah ..	23.8.12	R.N.J.
2176	Oakburn	5 years	A. C. Petrass ..	Horsham ..	3.7.12	E.A.K.
2292	Oliver Twist ..	5 years	Ingram Bros. ..	Rochester ..	20.8.12	E.A.K.
2363	Patrick's Pride ..	5 years	E. L. Edwards ..	Kilmore ..	26.9.12	R.G.
2253	Percy's Hero ..	5 years	J. Vennell ..	Kaniva	15.8.12	E.A.K.
2231	Powisland Blue Blood II.	5 years	D. J. Milne ..	Kerang ..	9.8.12	E.A.K.
2311	Primley Achilles ..	5 years	R. A. Smales ..	Mildura ..	27.8.12	R.N.J.
2163	Procurator ..	5 years	C. Parsons ..	Newmarket (Special)	6.5.12	E.A.K.
2148	Prince Aerial ..	5 years	O'Leary Bros. ..	Penshurst ..	22.2.12	Appeal Board
2301	Prince Ettrick ..	5 years	A. McNamara ..	Tatura	22.8.12	E.A.K.
2308	Prince Newton ..	5 years	W. G. Down ..	Shepparton ..	23.8.12	E.A.K.
2273	Prince of Elderslie ..	5 years	W. J. Baikie ..	Cobram ..	23.8.12	R.N.J.
2227	Red Ensign ..	5 years	J. Ervin, sen. ..	Pyramid ..	6.8.12	E.A.K.
2271	Royal Charlie ..	5 years	W. J. Black ..	Benalla ..	15.8.12	R.G.
2340	Royal Colours ..	Aged	J. Ball	Werribee ..	14.9.12	E.A.K.
2339	Royal Fashion ..	5 years	E. Cuthbert ..	Camperdown ..	11.9.12	E.A.K.
2283	Royal Favourite ..	5 years	H. J. Graham ..	Numurkah ..	23.8.12	R.N.J.
2229	*Royal Gift* ..	*5 years*	*W. McKnight* ..	*Swan Hill* ..	*7.8.12*	E.A.K.
2188	Royal Park ..	5 years	T. Oliver ..	City Horse Bazaar	15.7.12	R.G.
2209	Royal Scot ..	6 years	R. Fleming ..	Quambatook ..	30.7.12	R.G.
2189	Salisbury Hero ..	5 years	A. and J. Rankin	City Horse Bazaar	15.7.12	R.G.
2291	Scotch Heather ..	Aged	P. Fry	Hamilton ..	22.8.12	R.G.
2351	Searchlight ..	5 years	W. J. Craig ..	Korumburra ..	18.9.12	R.G
2350	Searchlight ..	5 year.	W. W. Herbert ..	Warragul ..	18.9.12	E.A.K.
2199	St. Andrew ..	6 years	A. Hart ..	Newmarket ..	22.7.12	E.A.K.
2347	Stirling Castle ..	5 years	R. V. Colliver ..	Lang Lang ..	17.9.12	R.G.
2200	Sweet William ..	5 years	Caffrey and Murphy	Newmarket ..	22.7.12	R.N.J.
2177	Sir Isaac Newton ..	6 years	D. McDonald and Sons	Horsham ..	3.7.12	E.A.K.
2360	Sir Malcolm ..	5 years	A. Wohlers ..	Ballan	26.9.12	E.A.K.
2257	Sir Patrick ..	5 years	H. Hill	Dimboola ..	16.8.12	E.A.K.
2359	Sir Percival II. ..	Aged	W. E. Hay s	Leongatha ..	16.9.12	R.G.
2312	Tam McKenzie ..	5 years	V. C. Reid ..	Agricultural Offices	31.8.12	R.N.J.
2210	Tam O' Again ..	5 years	C. Hands ..	Boort	30.7.12	R.G.
2371	Target	7 years	Gibson Bros. ..	Omeo	9.10.12	E.A.K.

SUPPLEMENTARY LIST OF LIFE CERTIFICATED STALLIONS—*continued.*

DRAUGHTS—*continued.*

Cert. No.	Name of Horse.	Age.	Owner.	Parade.	Date of Examination.	Officer.
2170	Tom Walton	5 years	F. W. Sallmann	Dimboola (Special)	2.7.12	E.A.K.
2191	*The Colonel*	5 years	*S. Daun*	*City Horse Bazaar*	19.7.12	R.G.
2222	The Workman	6 years	A. Arnold	Warracknabeal	2.8.12	E.A.K.
2374	Udale	5 years	H. A. Currie	Camperdown (Special)	28.11.12	E.A.K.
2248	Uxbridge Fyvie	5 years	J. McCulloch	Maryborough	12.8.12	R.N.J.
2154	Wabun	5 years	E. Currie	Scottish Exam.	3.1.12	..
2179	Waikato	5 years	G. H. Hill	Horsham	3.7.12	R.N.J.
2216	Wally	5 years	W. E. Poulton	Hopetoun	30.7.12	E.A.K.
2217	Young Benmore	Aged	C. G. Lear	Hopetoun	30.7.12	E.A.K.
2285	Young Coronation	Aged	J. W. Milbus	Hamilton	22.8.12	R.G.
2264	Young St. Albans	5 years	G. R. Goods	Minyip	8.8.12	R.G.

THOROUGHBREDS.

Cert. No.	Name of Horse.	Age.	Owner.	Parade.	Date of Examination.	Officer.
2186	*Clyde*	Aged	F. W. Clarke	*City Horse Bazaar*	15.7.12	R.N.J.
2159	Demolition	Aged	O. Maroske	Agricultural Offices	24.4.12	E.A.K.
2195	Euclid	Aged	J. R. Henry	Newmarket	22.7.12	R.N.J.
..	Ganymedes	Aged	T. O. Guthrie	South Australian Exam.	1.8.12	..
2260	Harmattan	5 years	R. W. Storey	Euroa	16.8.12	R.G.
2289	Lord Nolan	Aged	Dr. Syme	Mordialloc (Special)	27.8.12	W.J.C.
2320	Orissa	6 years	C. J. H. Nissen	Royal Show	2.9.12	E.A.K.
2147	Posture	Aged	J. D. Lewis	Agricultural Offices	2.3.12	R.N.J.
2215	*Royal Fusilier*	Aged	*Turner Bros.*	*New Zealand Exam.*	29.6.12	
2362	Salvador	Aged	S. R. Lawrence	Swan Hill (Special)	25.9.12	R.N.J.
2309	Sentronus	6 years	S. Whitehead	Shepparton	23.8.12	E.A.K.
2172	Stickup	Aged	A. and J. H. Young	Horsham	2.7.12	R.N.J.
..	St. Vincent	Aged	H. Mentha	Sth. Aust. Exam.	22.9.09	..

LIGHT HORSES.

Cert. No.	Name of Horse.	Age.	Owner.	Parade.	Date of Examination.	Officer.
2219	Almont S.	5 years	F. W. Schickerling	Warracknabeal	2.8.12	E.A.K.
2237	Arrel	5 years	J. Dempster	Heathcote	5.8.12	R.N.J.
2305	Ashville Boy	5 years	T. Moore	Shepparton	23.8.12	E.A.K.
2241	Belac	Aged	R. McMaster	Ararat	9.8.12	R.G.
2342	Booberoo	Aged	G. N. Horne	Ballarat	14.9.12	R.N.J.
..	Cocomar	5 years	P. Quirk	N.S.W. Exam.	16.5.12	..
2232	Correct Way	Aged	J. O'Donnell	Elmore	9.8.12	E.A.K.
2249	Decorator	5 years	F. Jennings	Inglewood	13.8.12	R.N.J.
2272	Digilista	Aged	J. Reynoldson	Cobram	23.8.12	R.N.J.
2295	*Digitalto*	*5 years*	*J. W. Smith*	*Rochester*	*20.8.12*	E.A.K.
2314	Dignity	5 years	W. Lang	Royal Show	2.9.12	E.A.K.
2315	Dillon Bell	5 years	W. Edwards	Royal Show	2.9.12	R.N.J.
2349	Dixie Claire	6 years	D. A. Linacre	Warragul	18.9.12	E.A.K.
2213	Donald Wallace	5 years	J. M. Oughtred	Wycheproof	2.8.12	W.J.C.
2207	Expectation	Aged	S. Cameron	Quambatook	30.7.12	R.G.
2187	Financier	Aged	W. L. Tredrea	City Horse Bazaar	15.7.12	R.N.J.
2173	Gerald Cleve	5 years	P. Seelander	Warracknabeal	2.7.12	R.N.J.
2184	Glenroy	Aged	W. A. McLellan	City Horse Bazaar	15.7.12	E.A.K.
2174	Grattan Bells	6 years	T. Sherwood	Dooen North	2.7.12	R.N.J.
2262	Huon Junior	Aged	P. Maroney	Wangaratta	13.8.12	R.G.
2353	Jack Huon	5 years	P. Donovan	Ballarat	14.9.12	R.N.J.
2230	Joy Bells	5 years	M. Peacock	Kerang	9.8.12	E.A.K.
2299	Kent Cleve	5 years	J. Devlin	Tatura	22.8.12	E.A.K.
2318	*King Osterley*	*5 years*	*D. Taylor*	*Royal Show*	*2.9.12*	E.A.K.
2259	King Osterley II.	5 years	G. Anderson	Geelong	13.8.12	E.A.K.
2334	Kingspring	5 years	R. McDonald	Kyneton	10.9.12	R.N.J.
2165	Lou Double	Aged	J. J. Bartlett	Agricultural Offices	8.6.12	R.G.
2326	Lord McKinney	5 years	G. H. Dunlevey	Kaneira (Special)	30.8.12	G.H.
2280	Middy Huon	5 years	C. Baurchier	Numurkah	23.8.12	R.N.J.
2245	Millionaire	5 years	J. Rossiter	Birchip	9.8.12	R.N.J.
2373	Oakwood	5 years	J. F. Folland	Ballarat Show (Special)	14.11.12	E.A.K.
2346	O.K.	5 years	G. H. Minns	*Bacchus Marsh*	*14.9.12*	R.G.
2327	Orderly Wilks	6 years	W. E. Gibson	Mirboo North	10.9.12	R.G.
2335	Owyhee Chief	5 years	V. Duggan	Kyneton	10.9.12	R.N.J.
2224	Prince Douglas	5 years	Mrs. C. White	Agricultural Offices	3.8.12	W.J.C.
2367	Prince Rupert	5 years	A. McInnes	Morwell	1.10.12	R.N.J.
[illegible]	Richard Cleve	[illegible]	H. Dale	Agricultural Offices	[illegible]	R.N.J.

SUPPLEMENTARY LIST OF LIFE CERTIFICATED STALLIONS—*continued.*

Cert. No.	Name of Horse.	Age.	Owner.	Parade.	Date of Examination.	Officer.
	LIGHT HORSES—*continued.*					
2344	Righto	6 years	Sharp Bros. ..	Ballarat ..	14.9.12	R.N.J.
2282	Sir Hampden ..	5 years	J. H. Fraser ..	Numurkah ..	23.8.12	R.N.J.
2333	*Snip*	5 years	*A. C. Cook* ..	*Dandenong* ..	11.9.12	R.N.J.
2304	Sports Huon ..	5 years	J. T. Ovens ..	Kyabram ..	22.8.12	E.A.K.
2178	Surety	Aged	J. McDonald ..	Horsham ..	3.7.12	E.A.K.
2234	*The Howlet* ..	*5 years*	A. Scott ..	Elmore	9.8.12	E.A.K.
2201	The Jew	Aged	D. Clarke ..	New Zealand Exam.	14.6.12	..
2325	The Starling ..	Aged	J. H. Roberts ..	South Melbourne (Special)	7.9.12	R.G.
2211	Vernon McKinney ..	5 years	M. Mulligan ..	Bendigo ..	31.7.12	R.G.
2357	Weeho	5 years	J. Park ..	Tallangatta ..	17.9.12	R.N.J.
2235	Whitty Alto ..	5 years	S. A. McNaught ..	Elmore	9.8.12	E.A.K.
2223	Young Almont B. ..	5 years	J. Mitchell ..	Warracknabeal ..	2.8.12	E.A.K.
	PONIES.					
2160	Abitos	5 years	W. E. Glendinning	Agricultural Offices	16.4.12	Appeal *Board*
2277	Arab Chief ..	Aged	J. Williams ..	Numurkah ..	23.8.12	R.N.J.
..	Bally Leigh ..	..	A. E. Bowman ..	N.S.W. Exam. ..	27.7.10	..
2202	Billie Barlow ..	5 years	W. M. Donaldson	Charlton ..	18.7.12	G.H.
2251	Bonnie Argyle ..	5 years	W. Connors ..	Myrtleford ..	14.8.12	R.G.
2293	Brecknock ..	5 years	W. Tompkinson ..	Rochester ..	20.8.12	E.A.K.
2276	Clarion	6 years	W. Thompson ..	Nathalia ..	20.8.12	R.N.J.
2252	*Dandy*	*Aged*	*J. S. Ferguson* ..	*Swan Hill* ..	7.8.12	E.A.K.
2361	Dandy Donald ..	Aged	W. J. Rockett ..	Swan Hill (Special)	25.9.12	R.N.J.
2332	Dandy O'More ..	5 years	*L. Tatterson*	*Dandenong* ..	11.9.12	R.N.J.
2286	Garnet	Aged	S. Hutton ..	Penshurst ..	23.8.12	R.G.
2290	General Gordon ..	5 years	H. Dunn ..	Geelong Parade ..	13.8.12	E.A.K.
2341	*Highland Boy* ..	*Aged*	*P. G. Duffus* ..	Warrnambool ..	12.9.12	E.A.K.
2220	King George ..	5 years	C. Wilson ..	Warracknabeal ..	2.8.12	E.A.K.
2317	King Leo II. ..	6 years	E. Stokes ..	Royal Show ..	2.9.12	E.A.K.
2244	*Little Billy* ..	*6 years*	J. Lynch ..	Birchip	9.8.12	R.N.J.
2204	Panic II.	Aged	M. Finn.. ..	Sea Lake ..	17.7.12	G.H.
2321	Perfection ..	5 years	R. Wattie ..	Royal Show ..	2.9.12	W.J.C.
2296	Reality Rex ..	5 years	S. O'Brien ..	Rochester ..	20.8.12	E.A.K.
2322	Rysharold Hambletonion	5 years	W. B. Metherall and Son	Royal Show ..	2.9.12	R.N.J.
2376	Satite	5 years	A. J. Plum ..	Wangaratta (Special)	22.11.12	Appeal Board
2345	Souter Billy ..	5 years	A. Roberts ..	Ballarat ..	14.9.12	R.N.J.
2365	Starlight	..	F. E. Harris ..	N.S.W. Exam. ..	2.8.12	..
2364	Starlight	Aged	H. Le Guier ..	Kilmore ..	26.9.12	R.G.
..	Sultan	..	Holstock Bros. ..	N.S.W. Exam. ..	..	..
2242	The Hero	5 years	V. Hay ..	Ararat	9.8.12	R.G.
2181	The Ideal ..	5 years	W. E. Rosling ..	N.S.W. Exam. ..	1.4.12	..
2182	The Real Thing ..	5 years	D. E. Stirrat ..	N.S.W. Exam. ..	1.4.12	..
2236	Tommy Dodd ..	Aged	W. A. Nicholls ..	Stawell	5.8.12	R.G.
2169	Tom Thumb ..	5 years	W. H. *Thomas* ..	*City Horse Bazaar*	18.6.12	E.A.K.

LIST OF TERMINABLE CERTIFICATED STALLIONS.

(Four-year-old Certificates expiring 30th June, 1913).

Cert. No.	Name of Horse.	Owner.	Parade.	Date of Examination.	Officer.
			DRAUGHTS.		
574/4	*Abbotsford* ..	*Colvin Bros.* ..	*Nathalia* ..	*20.8.12*	*R.N.J.*
447/4	Abbot's Fancy ..	A. Robertson ..	Newmarket (Special)	6.5.12	E.A.K.
492/4	Abbot Smith ..	J. E. Small ..	City Horse Bazaar	15.7.12	R.N.J.
598/4	Abbot's Pride ..	S. H. Wilson ..	Tungamah ..	22.7.12	R.N.J.
567/4	Admiral's Champion	Henry Cronk ..	Wangaratta ..	13.8.12	R.G.
575/4	Albion	Oakes Bros. ..	Nathalia ..	20.8.12	R.N.J.
597/4	*Attractions Champion*	*W. Morley* ..	*Rutherglen* ..	*26.8.12*	*E.A.K.*
459/4	Auditor	Mitchell and O'Brien	City Horse Bazaar	18.6.12	E.A.K.
618/4	Australia's Favourite	M. Mahoney	Terang	9.9.12	E.A.K.
532/4	Baden Powell ..	J. Adams ..	Swan Hill ..	7.8.12	E.A.K.
505/4	Balfour's Pride ..	J. Anderson ..	City Horse Bazaar	16.7.12	R.N.J.
593/4	*Balmoral*	*Green and Son* ..	*Shepparton* ..	*23.8.12*	*E.A.K.*
488/4	Bardon Powerful ..	W. Price-Jones ..	English Exam. ..	16.2.12	..
546/4	Baron Argyle ..	W. Hegarty ..	Donald	7.8.12	R.N.J.
493/4	Baron Eiffelton ..	A. Davidson ..	City Horse Bazaar	15.7.12	E.A.K.
455/4	Baronet	Caffrey and Murphy	Newmarket (Special)	17.6.12	E.A.K.
521/4	Baron Fenwick ..	J. H. Sargood ..	Bendigo ..	31.7.12	R.G.
644/4	*Baron Gleniffer* ..	*S. J. Lynn* ..	*Orbost*	*3.10.12*	*R.N.J.*
460/4	Baron's Pride ..	T. Kennedy ..	City Horse Bazaar	18.6.12	R.G.
612/4	Baron's Prince ..	Ingram Bros. ..	Kyneton ..	10.9.12	R.N.J.
578/4	Baron Woodlea ..	W. Williams ..	Numurkah ..	23.8.12	R.N.J.
428/4	Barony	J. R. McKenzie ..	Scottish Exam. ..	3.1.12	.
619/4	Barrabool ..	J. Axford ..	Terang	9.9.12	E.A.K.
542/4	Bay Star	T. E. Parry ..	St. Arnaud ..	6.8.12	R.N.J.
516/4	Belted Ben ..	A. Giddings ..	Sea Lake ..	17.7.12	G.H.
429/4	Bladnock	L. H. Lanyon ..	Scottish Exam. ..	3.1.12	..
582/4	Blue Royal ..	Balkin and Gerdts	Hamilton ..	22.8.12	R.G.
522/4	Bold Baron ..	H. Jackman ..	Bendigo ..	31.7.12	R.G.
585/4	Bonny Athol ..	W. H. Bidmore ..	Penshurst ..	25.8.12	R.G.
494/4	Border Lad ..	Foster and Son ..	City Horse Bazaar	15.7.12	E.A.K.
633/4	Boro Albert Victor	R. N. Scott ..	Korumburra ..	18.9.12	R.G.
453/4	Boro Baron ..	A. Hart.. ..	Victoria Horse Bazaar (Special)	9.5.12	R.G.
444/4	Boro Menestral III.	E. Parkes ..	English Exam. ..	15.2.13	..
438/4	Bramhope Parthian	R. W. Renfrey ..	English Exam. ..	15.2.12	..
517/4	Braw Scot ..	Alex. Sands ..	Sea Lake ..	17.7.12	G.H.
487/4	Breedon Pioneer ..	A. and J. H. Young	Horsham ..	2.7.12	R.N.J.
456/4	Bridge Hill King ..	M. J. Caffrey ..	Newmarket (Special)	17.6.12	E.A.K.
509/4	British Heather ..	S. H. Wilson ..	Newmarket ..	22.7.12	E.A.K.
510/4	Brown Friar ..	—. Meminsen ..	Newmarket ..	22.7.12	E.A.K.
572/4	Captain Dale ..	E. Roberts ..	Charlton ..	22.8.12	W.J.C.
599/4	Captain Grigg ..	J. Blackwood ..	Yarrawonga ..	27.8.12	E.A.K.
442/4	Carmichael ..	Gooden Bros. ..	Ulowa (Special) ..	16.4.12	E.A.K.
600/4	Carolyn	J. W. Dean ..	Royal Show ..	2.9.12	R.G.
486/4	Cast Iron II. ..	A. and J. Young..	Horsham ..	2.7.12	R.N.J.
528/4	Champion Again ..	Lee and Sons ..	Goroke	31.7.12	G.H.
495/4	Champion of the West	W. Zimmerman ..	City Horse Bazaar	15.7.12	R.G.
430/4	Cicero	A. C. Smith ..	Scottish Exam.	3.1.12	..
439/4	Coleshill Jolly King	P. Lock.. ..	English Exam. ..	15.2.12	..
594/4	Comet	Brock Bros. ..	Trafalgar ..	20.8.12	R.G.
608/4	Commander ..	Jeffrey Bros. ..	Whittlesea ..	9.9.12	R.N.J.
583/4	Clydesdale Bill ..	H. Schnieder ..	Hamilton ..	22.8.12	R.G.
588/4	Clydesdale Prince ..	E. and A. Breen	Kyabram ..	22.8.12	E.A.K.
461/4	Coronation ..	Mitchell and O'Brien	City Horse Bazaar	18.6.12	E.A.K.
526/4	Coronation Prince ..	C. Cornish ..	Bendigo (Special)	1.8.12	R.G.
482/4	Cranbourne Stewart	E. J. Glossop ..	Agricultural Offices	6.7.12	R.G.
561/4	Creslow Kingmaker	Geelong Harbour Trust	Geelong ..	13.8.12	E.A.K.
490/4	Cross-in-hand Charmer	F. E. Coster ..	English Exam. ..	16.2.12	..
469/4	Crown Tenant ..	W. Langley ..	Horsham ..	2.7.12	R.N.J.

LIST OF TERMINABLE CERTIFICATED STALLIONS—*continued.*

Cert. No.	Name of Horse.	Owner.	Parade.	Date of Examination.	Officer
		DRAUGHTS—*continued.*			
431/4	Curler	J. R. McKenzie ..	Scottish Exam. ..	3.1.12	..
511/4	Darnley's Pride of Rythesdale	Sims Bros. ..	Newmarket ..	22.7.12	R.N.J.
587/4	Defender	D. McNamara	Rochester ..	20.8.12	E.A.K.
557/4	Defender	Hooper Bros. ..	Benalla ..	15.8.12	R.G.
448/4	Diamond King ..	J. Leitch ..	Newmarket (Special)	6.5.12	E.A.K.
565/4	Dividend	M. Cann ..	Euroa	16.8.12	R.G.
432/4	Donibristle ..	Exors. late T. Wilson	Scottish Exam. ..	3.1.12	..
579/4	*Dreadnought* ..	*J. C. Rockliffe* ..	*Numurkah* ..	23.8.12	R.N.J.
573/4	Drummer's Style ..	N. Anderson ..	Murchison ..	22.8.12	R.N.J.
484/4	Dunsby Victor II. ..	A. and J. Young..	Horsham ..	2.7.12	R.N.J.
481/4	Dunsmore Ragged Jacket	W. Price-Jones ..	English Exam. ..	16.2.12	..
457/4	*Eaton Charmer* ..	*M. J. Caffrey* ..	*Newmarket (Special)*	17.6.12	E.A.K.
489/4	Elksley Commander	J. J. Carroll ..	English Exam. ..	27.3.12	..
547/4	Favourite ..	—. Hannah	Donald	7.8.12	R.N.J.
519/4	First Choice ..	R. H. Lanyon ..	Boort	30.7.12	R.G.
533/4	*Flashwood's Model*	*C. Mason* ..	*Warracknabeal* ..	2.8.12	E.A.K.
475/4	Fortune Laddie ..	D. McPherson ..	Horsham ..	3.7.12	R.N.J.
629/4	Forward	R. Calls.. ..	Foster	16.9.12	R.G.
433/4	Fred	J. R. McKenzie ..	Scottish Exam. ..	3.1.12	..
550/4	Fyvie Blacon ..	A. J. Glen ..	Birchip	9.8.12	R.N.J.
496/4	*Gaer Conqueror* ..	*C. Payne* ..	*City Horse Bazaar*	15.7.12	R.G.
472/4	Gamekeeper ..	Hermann Hill ..	Horsham ..	2.7.12	R.N.J.
642/4	Gay Gordon ..	J. Ferguson ..	Swan Hill ..	25.9.12	R.N.J.
434/4	General Douglas ..	R. Kennedy ..	Scottish Exam. ..	3.1.12	..
449/4	Glencoe Glen Lyon	A. Robertson ..	Newmarket (Special Exam.)	6.5.12	E.A.K.
421/4	Glen Donald ..	J. Henderson ..	Leongatha (Special Exam.)	27.2.12	W.J.C.
436/4	Glengonna ..	F. Foubisher ..	Scottish Exam. ..	3.1.12	..
536/4	Glenmuick ..	J. Clark ..	Yarrawonga (Special Exam.)	2.8.12	R.G.
497/4	Goldfinder ..	E. A. Weekes ..	City Horse Bazaar	15.7.12	R.G.
514/4	Good Enough ..	John Mills ..	Newmarket ..	23.7.12	R.N.J.
531/4	Hampton Ben ..	H. Allen ..	Beulah	1.8.12	E.A.K.
627/4	Heather Lad ..	Benson Bros. ..	Bacchus Marsh ..	14.9.12	R.G.
638/4	Hiawatha ..	A. L. Hamilton ..	Corryong ..	18.9.12	R.N.J.
477/4	Highland Prince ..	F. Mentha ..	Horsham ..	3.7.12	E.A.K.
598/4	His Lordship ..	R. Jack and Son..	Rutherglen ..	26.8.12	E.A.K.
628/4	His Majesty ..	E. J. Rickey ..	Smeaton ..	12.9.12	R.N.J.
621/4	Invincible ..	Tallent Bros. ..	Ballarat ..	14.9.12	R.N.J.
507/4	*Jack's the Lad* ..	*C. Bird*	*City Horse Bazaar*	17.7.12	W.J.C.
631/4	Kelm's Best ..	J. Gooley ..	Leongatha ..	16.9.12	R.G.
570/4	Kelvin's Fancy ..	J. J. Murphy ..	Rainbow ..	8.8.12	R.G.
606/4	Kingston	Henebery and Hawkins	Sale	12.9.12	R.G.
537/4	Kinloch Again ..	W. T. Bodey ..	Murtoa	31.7.12	E.A.K.
445/4	Kittrick Dale ..	S. E. Roberts ..	Scottish Exam. ..	15.2.12	..
476/4	Kingfisher.. ..	R. P. Young ..	Horsham ..	3.7.12	R.N.J.
498/4	King George ..	A. L. and E. M. Walter	City Horse Bazaar	15.7.12	R.G.
641/4	Laird of Glengarry	G. Hopwood and Son	Ballan	26.9.12	E.A.K.
623/4	Landlord	D. McCallum ..	Ballarat ..	14.9.12	R.N.J.
615/4	Latest Fashion ..	J. Phalp ..	Colac	13.9.12	E.A.K.
450/4	Laudevar	Alex. Robertson ..	Newmarket (Special)	6.5.12	E.A.K.
467/4	Leonard	W. Price-Jones ..	English Exam. ..	2.3.12	..
609/4	Loch Allen ..	Thos. Smith ..	Whittlesea ..	9.9.12	R.N.J.
534/4	Longford's Fashion..	J. Gildea ..	Warracknabeal ..	2.8.12	E.A.K.
485/4	Lowesby Masterpiece	A. and J. H. Young	Horsham ..	2.7.12	R.N.J.
632/4	Lymm Champion II.	E. Wilson ..	Leongatha ..	16.9.12	R.G.
458/4	Lymm Raider ..	J. Caffrey ..	Newmarket (Special)	17.6.12	E.A.K.
639/4	Lord Donald ..	A. Harris ..	Corryong ..	18.9.12	R.N.J.
624/4	Lord Dundee ..	J. J. Downey ..	Ballarat ..	14.9.12	R.N.J.
512/4	Lord Islington ..	Exors. late R. Hornbuckle	Newmarket ..	22.7.12	E.A.K.

LIST OF TERMINABLE CERTIFICATED STALLIONS—*continued.*

Cert. No.	Name of Horse.	Owner.	Parade.	Date of Examination.	Officer.
		DRAUGHTS—*continued.*			
465/4	Lord Kelvin ..	J. White ..	City Horse Bazaar	18.6.12	R.G.
590/4	*Lord Mitchell* ..	*H. McLaren* ..	*Shepparton* ..	23.8.12	E.A.K.
650/4	Major Eddy ..	H. Hall ..	Agricultural Offices	1.3.13	R.N.J.
506/4	Major's Pride ..	Stuckey Bros. ..	City Horse Bazaar	16.7.12	E.A.K.
589/4	Mark Ward ..	J. Schinnick ..	Numurkah ..	23.8.12	R.N.J
479/4	Marton Peacemaker	W. Price-Jones ..	English Exam. ..	16.2.12	..
480/4	Marton Zealot ..	J. Flanagan ..	English Exam. ..	16.2.12	..
643/4	Matoura	McGorran Bros. ..	Morwell ..	1.10.12	R.N.J.
440/4	Mayland's Dray King	G. Goldsmith ..	English Exam. ..	15.2.12	..
441/4	Medlar Harold ..	F. W. Griffin ..	English Exam. ..	15.2.12	..
544/4	Model Prince ..	John Giffard ..	St. Arnaud ..	6.8.12	R.N.J.
541/4	Moravian	H. Boyd ..	Elmore	9.8.12	E.A.K.
466/4	Nailstone Buchanan	W. Price-Jones ..	Newmarket (Special)	28.6.12	E.A.K.
468/4	Nailstone Jew ..	W. Price-Jones ..	English Exam. ..	16.2.12	..
602/4	Neotsfield Rufus ..	John Munro ..	Royal Show ..	2.9.12	R.G.
553/4	Never Despair ..	Thos. Kelly ..	Inglewood ..	13.8.12	R.N.J.
576/4	Newton's Best ..	J. J. McCarron ..	Nathalia ..	20.8.12	R.N.J
627/4	Noble King ..	W. A. Hammill ..	Sale	12.9.12	R.G.
554/4	Perfection ..	N. Ramsay ..	Inglewood ..	13.8.12	R.N.J
568/4	Premier	G. Smith ..	Rosedale (Special)	15.8.12	R.G.
559/4	Premier Lauder ..	P. Kelleher ..	Benalla ..	15.8.12	R.G.
592/4	Premier Montgomery of Willowbank	Undera Syndicate	Shepparton .	23.8.12	E.A.K.
566/4	Premier McNab ..	John Burns ..	Euroa	16.8.12	R.G.
515/4	Pride of Fashion ..	W. Walter ..	Lara (Special Exam.)	25.7.12	E.A.K.
581/4	Prince Cedric ..	J. Jeffrey ..	Numurkah ..	23.8.12	R.N.J.
622/4	Prince Imperial ..	J. Mansfield ..	Kyneton ..	10.9.12	R.N.J.
530/4	Prince Thornley ..	C. McFarlane ..	Hopetoun ..	30.7.12	E.A.K.
513/4	Quality Prince ..	J. Bodey ..	Newmarket ..	22.7.12	R.G.
552/4	Rantin Robin ..	J. Clark ..	Maryborough ..	12.8.12	R.N.J.
563/4	Referendum ..	J. F. Farrer ..	Geelong ..	13.8.12	E.A.K.
478/4	Royal Ben ..	A. C. Hatley ..	Horsham ..	3.7.12	E.A.K.
635/4	*Royal Carlyle* ..	*R. H. Biggar* ..	*Korumburra* ..	18.9.12	R.G.
500/4	Royal Champion ..	W. Hercus ..	City Horse Bazaar	15.7.12	E.A.K.
625/4	Royal Prince ..	W. Lewin ..	Ballarat ..	14.9.12	R.N.J.
586/4	Royal Review ..	Mitchell and *O'Brien*	New South Wales *Exam.*	2.8.12	..
451/4	Royal Review ..	A. Robertson ..	Newmarket (Special)	6.5.12	E.A.K.
577/4	Royal Robin ..	P. and R. Ferrari	Nathalia ..	20.8.12	R.N.J.
614/4	Royalty ..	Roberts Bros. ..	Daylesford ..	13.9.12	R.N.J.
470/4	Royal Willie ..	A. Boyd ..	Horsham ..	2.7.12	R.N.J.
545/4	Scarcliffe Memento	E. G. Bath ..	St. Arnaud ..	6.8.12	R.N.J.
473/4	Scotland Yet ..	J. Coles and Sons	Horsham ..	2.7.12	R.N.J.
538/4	Scottish Lad ..	Alex. Hoff ..	Murtoa	31.7.12	E.A.K.
636/4	Scottish Pride ..	A. J. Tozer ..	Korumburra ..	18.9.12	R.G.
501/4	Sir Baron ..	Thompson Bros. ..	City Horse Bazaar	15.7.12	E.A.K.
463/4	Sir Ivor	Mitchell and O'Brien	City Horse Bazaar	18.6.12	R.G
520/4	Sir John Small ..	D. Blair ..	Boort	30.7.12	R.G.
555/4	Sir Regulus ..	W. Howe ..	Inglewood ..	13.8.12	R.N.J.
464/4	Sir Rudolph ..	R. Clarke ..	City Horse Bazaar	18.6.12	E.A.K.
502/4	Sir Walter Ryal Bush	H. S. Graham ..	City Horse Bazaar	15.7.12	E.A.K.
474/4	Sir Walter Scott ..	H. Whisson ..	Horsham ..	2.7.12	R.N.J.
551/4	Southern Star ..	H. Green ..	Birchip	9.8.12	R.N.J.
626/4	Statesman ..	N. C. Teychenne	Melbourne (Special)	14.9.12	R.N.J.
443/4	Tibberton Dray King	T. Withers and Sons	English Exam. ..	28.12.11	..
637/4	Top Sail	Olsen and Hammond	Korumburra ..	18.9.12	R.G.
437/4	Topsman	J. R. McKenzie ..	Scottish Exam. ..	3.1.12	..
503/4	Tweedside Again ..	J. A. Mitchell and Co.	City Horse Bazaar	15.7.12	R.N.J.
454/4	The Earl	Department of External Affairs	City Horse Bazaar (Special)	20.5.12	E.A.K.
560/4	The Premier ..	T. Haley, jun. ..	Benalla ..	16.8.12	R.G.
589/4	The Star	J. McLeod ..	Kyabram ..	22.8.12	E.A.K.
610/4	The Squatter ..	J. H. Cornfoot ..	Whittlesea ..	9.9.12	R.N.J.
548/4	Waironga Prince ..	W. Blair ..	Watchem ..	8.8.12	R.N.J.

LIST OF TERMINABLE CERTIFICATED STALLIONS—*continued.*

Cert. No.	Name of Horse.	Owner.	Parade.	Date of Examination.	Officer.
		DRAUGHTS—*continued.*			
564/4	Warkworth ..	W. Grant ..	Geelong ..	13.8.12	E.A.K.
471/4	Warkworth King ..	B. Ellyett ..	Horsham ..	2.7.12	R.N.J.
539/4	Warranooke ..	A. Anderson ..	Murtoa ..	31.7.12	E.A.K.
556/4	Young Dundonald ..	H. Williamson ..	Myrtleford ..	14.8.12	R.G.
504/4	Young Ivanhoe ..	Mitchell and Co.	City Horse Bazaar	15.7.12	R.N.J.
569/4	Young Kakamatua	R. Nimmo ..	Minyip ..	8.8.12	R.G.
648/4	Young Timekeeper	Anderson Bros. ..	Berwick (Special)	19.11.12	E.A.K.
611/4	Young Up-to-Date	H. J. Rix ..	Dandenong ..	11.9.12	R.N.J.
		LIGHT HORSES.			
549/4	Abby ..	Harricks Bros. ..	Ararat ..	6.8.12	R.G.
595/4	Direction ..	R. R. Corbould ..	Mildura ..	27.8.12	R.N.J.
540/4	Direct Speed ..	E. Pay ..	Kerang ..	9.8.12	E.A.K.
543/4	Echo ..	E. G. Bath ..	St. Arnaud ..	6.8.12	R.N.J.
452/4	Electric Bells ..	P. S. Spark ..	Caulfield (Special)	2.5.12	E.A.K.
584/4	Fakreddin.. ..	Hon S. W. Cooke	Hamilton ..	22.8.12	R.G.
523/4	First Voyage ..	W. Greaves ..	Bendigo ..	31.7.12	R.G.
630/4	Gay Bells ..	J. D. Symons ..	Leongatha ..	16.9.12	R.G.
620/4	Glen Alvie ..	J. Wade ..	Ballarat ..	14.9.12	R.N.J.
524/4	Harold Direct ..	T. Cawsey ..	Bendigo ..	31.7.12	R.G.
562/4	Highland Cleve ..	T. Larcombe ..	Geelong ..	13.8.12	E.A.K.
376/4	Lord Lincoln ..	G. Trigg ..	Colac ..	13.9.12	E.A.K.
601/4	Lubricator ..	Opie Bros. ..	Royal Show ..	2.9.12	R.N.J.
640/4	Oaklands	A. Porteous ..	Ballarat ..	14.9.12	R.N.J.
525/4	Oakwood King ..	R. Matchett ..	Bendigo ..	31.7.12	R.G.
634/4	Odd Patch ..	G. A. Finlay ..	Korumburra ..	18.9.12	R.G.
591/4	Perfection ..	E. Baker ..	Shepparton ..	23.8.12	E.A.K.
613/4	Preston Junior ..	McClure Bros. ..	Kyneton ..	10.9.12	R.N.J.
529/4	Prince Harold ..	C. Darley ..	Hopetoun ..	30.7.12	E.A.K.
604/4	Silver Bells ..	A. G. McClements	Traralgon ..	11.9.12	R.G.
535/4	Sir Carlaw ..	J. Bunge ..	Warracknabeal ..	2.8.12	E.A.K.
647/4	Sir Dominant ..	Colclough Bros. ..	Ballarat Show (Special)	14.11.12	E.A.K.
518/4	Sparkling Bells ..	Tye Bros. ..	Melbourne (Special)	31.7.12	W.J.C.
605/4	Walter Bell Boy ..	A. West ..	Bairnsdale ..	11.9.12	R.G.
571/4	Yarpeet ..	J. Fisher ..	Rainbow ..	6.8.12	R.G.
		PONIES.			
596/4	Advance ..	L. Harper ..	Rutherglen ..	26.8.12	E.A.K.
646/4	Almont Hero ..	T. Kenny ..	Ballarat (Special)	14.11.12	E.A.K.
617/4	Bobs ..	W. H. Podger ..	Camperdown ..	11.9.12	E.A.K.
499/4	King Leo	R. J. Nink ..	City Horse Bazaar	15.7.12	E.A.K.
558/4	Little Wonder II. ..	H. Burness ..	Benalla	15.8.12	R.G.
603/4	Prince Leo III. ..	J. R. Brien ..	Royal Show ..	2.9.12	R.N.J.
649/4	Sir Rupert ..	A. McKinnon ..	Wahgunyah (Special)	18.1.13	E.A.K.
645/4	Wee MacGregor ..	J. Hammill ..	Orbost	3.10.12	R.N.J.
483/4	What's Wanted III.	Miss S. L. Robinson	Agricultural Offices (Special)	6.7.12	R.G.

(Three-year-old Certificates expiring 30th June, 1913.)

DRAUGHTS.

Cert. No.	Name of Horse.	Owner.	Parade.	Date of Examination.	Officer.
847/3	Abbeydale ..	Mitchell and O'Brien	Scottish Exam. ..	15.2.12	..
822/3	Abbot's Own ..	Robertson and McKenzie	Newmarket (Special)	26.4.12	E.A.K.
855/3	Abbot's Pride ..	Hon. S. W. Cooke	Hamilton ..	17.6.12	R.N.J.
971/3	Admiral Byng ..	G. Cropley ..	New Zealand Exam.	30.5.12	..
1012/3	Admiral Howard ..	R. W. Herkes ..	New Zealand Exam.	30.5.12	..
970/3	Admiral Nelson ..	J. Jeffrey ..	New Zealand Exam.	30.5.12	..
870/3	Advocate	Mitchell and O'Brien	City Horse Bazaar	18.6.12	E.A.K.
964/3	Agitator's Heir ..	James Langford ..	New Zealand Exam.	10.6.12	..

LIST OF TERMINABLE CERTIFICATED STALLIONS—*continued.*

Cert. No.	Name of Horse.	Owner.	Parade.	Date of Examination.	Officer.
		DRAUGHTS—*continued.*			
1019/3	Allandale	T. Davern ..	Newmarket ..	22.7.12	E.A.K.
929/3	Allan Raine .	J. E. Small ..	Agricultural Offices	13.7.12	R.N.J.
1014/3	Allanton .. .	J. Patrick ..	New Zealand Exam.	1.6.12	..
903/3	*Alston Prince Albert*	*W. Price-Jones* ..	Newmarket (Special)	28.6.12	E.A.K.
871/3	Ambassador .	Mitchell and O'Brien	City Horse Bazaar	18.6.12	E.A.K.
944/3	Ambastone Combine	W. Price-Jones ..	English Exam. ..	21.2.12	..
1020/3	Archer	W. R. Smith .	Newmarket ..	22.7.12	E.A.K.
965/3	Argyle	J. Drain ..	Agricultural Offices	15.7.12	E.A.K.
980/3	Ashton Lad .	R. Allen ..	City Horse Bazaar	15.7.12	E.A.K.
1086/3	Atlas	R. C. Hannah ..	Donald	7.8.12	R.N.J.
823/3	Aynsley Lad ..	J. R. Henry .	Newmarket (Special)	26.4.12	E.A.K.
930/3	Bainton .. .	O. E. Bodey ..	Agricultural Offices	13.7.12	R.N.J.
872/3	Bancor's Pride ..	G. Allardice ..	City Horse Bazaar	18.6.12	R.G.
981/3	Baron Again .	M. McMicking .	City Horse Bazaar	15.7.12	R.N.J.
1154/3	Baron Barnton ..	A. Watson, jun. ..	Kyneton ..	10.9.12	R.N.J.
907/3	Baron Black ..	J. D. Mitchell ..	New Zealand Exam.	31.5.12	..
972/3	Baron Black ..	E. O'Keefe ..	New Zealand Exam.	30.5.12	..
1011/3	Baron Clyde ..	A. W. Cunnington	New Zealand Exam.	30.5.12	..
982/3	Baron Cranley ..	A. Davidson ..	City Horse Bazaar	15.7.12	E.A.K.
824/3	Baron Fancy ..	J. R. Henry ..	Newmarket (Special Exam.)	26.4.12	E.A.K.
1083/3	Baron Laddie ..	A. McLennan .	Heathcote ..	5.8.12	R.N.J.
983/3	Baron Lane .	J. Sullivan ..	City Horse Bazaar	15.7.12	R.G.
825/3	Baron Lough ..	Gerrard Bros. ..	Newmarket (Special Exam.)	26.4.12	E.A.K.
826/3	Baron McLean ..	D. W. Stewart ..	Newmarket (Special Exam.)	26.9.12	E.A.K.
827/3	Baron Rae ..	J. Hamilton .	Newmarket (Special)	26.4.12	E.A.K.
1137/3	*Baron's Gem* ..	*R. Carroll* ..	*Royal Show* ..	2.9.12	R.G.
828/3	Baron's Pride ..	J. R. Henry ..	Newmarket (Special)	26.4.12	E.A.K.
1002/3	Baron Thistle	J. D. Mitchell ..	New Zealand Exam.	31.5.12	..
1149/3	Baron Watson ..	W. T. *Manifold* .	New Zealand Exam.	1.6.12	..
1009/3	Black Prince ..	S. J. Lynn ..	New Zealand Exam.	17.6.12	..
909/3	Bold Charmer ..	T. Sherwood ..	Horsham ..	2.7.12	R.N.J.
931/3	Bonnie Garthland ..	J. E. Small .	Agricultural Offices	13.7.12	R.N.J.
829/3	Bonnie McFarlane ..	Robertson and McKenzie	Newmarket (Special)	26.4.12	E.A.K.
814/3	Boro' Jameson II. ..	Reilly Bros. ..	English Exam. ..	15.2.12	..
816/3	Boro' Lion ..	F. W. Griffin ..	English Exam. ..	15.2.12	..
817/3	Boro' Ranger ..	W. T. Bodey ..	English Exam. ..	15.2.12	..
873/3	Bosun	Mitchell and O'Brien	City Horse Bazaar	18.6.12	E.A.K.
1021/3	Bothwell	A. E. Godden ..	Newmarket ..	22.7.12	R.N.J.
1007/3	Bounding Alexander	R. H. Webb ..	New Zealand Exam.	17.6.12	..
874/3	*Boy Scout* ..	*Mitchell and* O'Brien	*City Horse Bazaar*	18.6.12	R.G.
984/3	Bright Laddie ..	M. Simpson ..	City Horse Bazaar	15.7.12	R.N.J.
875/3	Britannic .. .	A. Bowman ..	City Horse Bazaar	18.6.12	E.A.K.
1057/3	Briton Again ..	G. L. Claxton ..	New Zealand Exam.	13.5.12	..
1179/3	Brookdale ..	J. T. Poynton ..	Ensay (Special) ..	8.10.12	E.A.K.
876/3	Captain	Mitchell and O'Brien	City Horse Bazaar	18.6.12	R.G.
973/3	Captain Cook ..	J. W. Blair ..	New Zealand Exam.	30.5.12	..
830/3	Captain Everest ..	J. R. Henry ..	Newmarket (Special Exam.)	26.4.12	E.A.K.

LIST OF TERMINABLE CERTIFICATED STALLIONS—*continued.*

Cert. No.	Name of Horse.	Owner.	Parade.	Date of Examination.	Officer.
		DRAUGHTS—*continued.*			
974/3	Captain Scott ..	Hon. Simon Fraser	New Zealand Exam.	30.5.12	
1077/3	Cardigan	T. Connor ..	Swan Hill ..	7.8.12	E.A.K.
1070/3	Casablanca ..	A. T. Treloar ..	Beulah	1.8.12	E.A.K.
924/3	Castle Ray ..	W. Johns ..	Horsham ..	3.7.12	R.N.J
939/3	Cincinatti ..	S. P. and W. H. Allan	Horsham ..	3.7.12	E.A.K.
877/3	Commander ..	D. Menzie ..	City Horse Bazaar	18.6.12	R.G.
856/3	Commodore ..	Caffrey and Murphy	Newmarket (Special)	17.6.12	E.A.K.
954/3	Clifton Colonel ..	W. Price-Jones ..	English Exam. ..	16.2.12	..
831/3	Cloverdale ..	Robertson and McKenzie	Newmarket (Special)	26.4.12	E.A.K.
987/3	Clydebank Again ..	W. McGaffin ..	City Horse Bazaar	15.7.12	R.G.
920/3	Clyde Boy ..	C. Reinheimer ..	Horsham ..	2.7.12	R.N.J.
1047/3	Cock of the North ..	Burge Bros. ..	Newmarket ..	23.7.12	E.A K.
992/3	Cooringa	J. O'Brien ..	City Horse Bazaar	16.7.12	E.A.K.
919/3	Coree	Parish and Huf ..	Horsham ..	2.7.12	R.N.J.
878/3	Count Everest ..	Mitchell and O'Brien	City Horse Bazaar	18.6.12	E.A.K.
1003/3	Craig Athol ..	J. D. Mitchell ..	New Zealand Exam.	31.5.12	..
832/3	*Craigie Champion* ..	J. R. Henry ..	Newmarket (Special)	26.4.12	E.A.K.
1043/3	Craigie's King ..	D. Clark ..	New Zealand Exam.	14.6.12	..
1106/3	Cremoran's Pride ..	W. Henneberg ..	Rainbow ..	6.8.12	R.G.
857/3	Crown Prince ..	Caffrey and Murphy	Newmarket (Special)	17.6.12	E.A.K.
1022/3	Culham Menestral ..	J. R. Henry ..	Newmarket ..	22.7.12	E.A.K.
879/3	Cup Winner ..	Mitchell and O'Brien	City Horse Bazaar	18.6.12	R.G.
1023/3	Dalmuir King ..	J. Guthrie ..	Newmarket ..	22.7.12	R.G.
833/3	Dalmuir Rob ..	L. Semmens ..	Newmarket (Special)	26.4.12	E.A.K.
943/3	Debden Conqueror ..	W. Price-Jones ..	Newmarket (Special Exam.)	28.6.12	E.A.K.
952/3	Demonstrator ..	C. Carra ..	New Zealand Exam.	7.6.12	..
1052/3	Derby Lad ..	H. Moss ..	Agricultural Offices	20.7.12	R.N.J.
1017/3	*Donald Mac* ..	*W. J. Craig* ..	*City Horse Bazaar*	*18.7.12*	*Appeal Board*
858/3	Donald Mack ..	W. Curtain ..	Newmarket (Special)	17.6.12	E.A.K.
1085/3	Donald's Pride II. ..	J. C. Braeur ..	Jeparit	7.8.12	R.G.
940/3	Don McDonald ..	E. Koenig ..	Horsham ..	3.7.12	E.A.K.
859/3	Drew's Pride ..	C. Parsons ..	Newmarket (Special)	17.6.12	R.N.J.
955/3	Duke XXI. .	W. Price-Jones ..	English Exam. ..	10.2.12	..
1013/3	Dukedom	T. Edney ..	New Zealand Exam.	1.6.12	..
851/3	Duke of Croskill ..	Mitchell and O'Brien	N.S.W. Exam. ..	1.4.12	..
945/3	Dunchurch Boy ..	W. Price-Jones ..	English Exam. ..	16.2.12	..
956/3	Dunchurch Prince ..	W. Price-Jones ..	English Exam. ..	10.2.12	..
1104/3	Duncraig Again ..	L. McLeod ..	New Zealand Exam.	14.5.12	..
1078/3	Dundonald ..	G. Neild ..	Swan Hill ..	7.8.12	E.A.K.
1053/3	Dundonald's Hero ..	J. Douglas ..	Charlton ..	18.7.12	G.H.
1115/3	Dunedin	R. and J. Dickson	Hamilton ..	22.8.12	R.G.
1076/3	Dun Lea	A. McKinnon ..	Pyramid ..	5.8.12	E.A.K.
1072/3	Dunrobin's Pride ..	D. Sutherland ..	Kerang	9.8.12	E.A.K.
957/3	Dunsby Friar II. ..	W. Price-Jones ..	English Exam. ..	15.2.12	..
1100/3	Dunsmore's Pride ..	T. A. Griffith ..	Benalla	15.8.12	R.G.
880/3	Durbar	J. M. Phillips ..	City Horse Bazaar	18.6.12	E.A.K.
958/3	Eaton Combination ..	W. Price-Jones ..	English Exam. ..	21.2.12	..
860/3	Eaton Ensign ..	W. Hicks ..	Newmarket (Special)	17.6.12	R.N.J.
1016/3	Electric	Smythe Bros. ..	City Horse Bazaar	18.7.12	Appeal Board

LIST OF TERMINABLE CERTIFICATED STALLIONS—*continued.*

Cert. No.	Name of Horse.	Owner.	Parade.	Date of Examination.	Officer.
		DRAUGHTS—*continued.*			
1129/3	Ettrick Sir	J. Bradshaw	Trafalgar	29.8.12	R.G.
852/3	*False Colours*	T. *Roche*	*N.S.W. Exam.*	*1.4.12*	..
1182/3	Federal Dick	A. Mason	Agricultural Offices	9.10.12	R.N.J.
1068/3	Federation's Pride	F. R. Burns	Goroke	31.7.12	G.H.
953/3	First Choice	C. W. Schultz	New Zealand Exam.	1.6.12	..
1024/3	Flowerdale Prince	A. R. Wilson	Newmarket	22.7.12	E.A.K.
1121/3	Fusilier	D. and M. McLeod	Sth. Aust. Exam.	8.7.12	..
881/3	Fyvie	Mitchell and O'Brien	City Horse Bazaar	18.6.12	E.A.K.
834/3	Gallant Boy	J. R. Henry	Newmarket (Special)	26.4.12	E.A.K.
975/3	Gallant Prince	Yeo Stokes	New Zealand Exam.	30.5.12	..
1139/3	Garthland Again	Brady Bros.	Royal Show	2.9.12	R.G.
1048/3	*Gay City*	E. *Vincent*	*Newmarket*	*23.7.12*	E.A.K.
882/3	Gay Gordon	A. W. Warren	N.S.W. Exam.	1.4.12	..
1080/3	General McDonald	J. Vickers	Elmore	9.8.12	E.A.K.
1181/3	Glenallan	A. J. Tozer	Scottish Exam.	13.1.12	..
1164/3	Glencairne's Pride	P. Jeffrey	Bacchus Marsh	14.9.12	R.G.
1025/3	Glenfarg	J. Bodey	Newmarket	22.7.12	R.N.J.
1113/3	Glen Gairn	J. MacGregor	Numurkah	23.8.12	R.N.J.
1166/3	Glengerrie	R. Cowie	Smeaton	12.9.12	R.N.J.
988/3	Glen Lyon	W. McGaffin	City Horse Bazaar	16.7.12	R.G.
1001/3	Glen Markie	M. McCormack	New Zealand Exam.	12.6.12	..
937/3	Glenmarkie	D. McRae	City Horse Bazaar	15.7.12	R.N.J.
1026/3	Glenryan	W. Hill	Newmarket	22.7.12	R.N.J.
1117/3	Gold Link	C. Rhodes	Casterton	21.8.12	R.G.
2153/3	Good Game	W. French	Scottish Exam.	3.1.12	..
1136/3	Gowan Brae	R. I. Argyle	Royal Show	2.9.12	R.N.J.
1108/3	Grand Emerald	Guiton Bros.	Rushworth	22.8.12	R.N.J.
989/3	*Handsome Jack*	W. *McGaffin*	*City Horse Bazaar*	*15.7.12*	R.G.
1027/3	Harry Lauder	J. R. Henry	Newmarket	22.7.12	R.N.J.
1051/3	Hector Dillon	K. Cameron	New Zealand Exam.	13.5.12	..
1028/3	Hector McDonald	W. Foubister	Newmarket	22.7.12	E.A.K.
946/3	Hero	Cain Bros.	Agricultural Offices	6.7.12	R.G.
1073/3	Hero's Pride	W. Dowling	Kerang	9.8.12	E.A.F
916/3	Highland Chief	Noske Bros.	Horsham	2.7.12	R.N.J.
850/3	Highland Laddie	M. Lowry	N.S.W. Exam.	1.4.12	..
947/3	Hindmaster	A. Chrystal	Agricultural Offices	6.7.12	R.G.
1094/3	*Honest Major*	*J. H. Meyer*	*Kaniva*	*15.8.12*	E.A.K.
1061/3	Horace's Pride	M. Walter	New Zealand Exam.	14.5.12	..
883/3	Invergowrie	M. McMicking	City Horse Bazaar	18.6.12	R.G.
926/3	Jackson	J. Mitchell	Horsham	3.7.12	R.N.J.
884/3	Jack Tar	Dean Bros.	City Horse Bazaar	18.6.12	E.A.K.
1132/3	Jamieson	J. J. Lawless	Yarrawonga	27.8.12	E.A.K.
1029/3	*Jock Flashlight*	P. *Quillian*	*Newmarket*	*22.7.12*	R.N.J.
1105/3	Kaiwera Knight	J. S. Feehan	New Zealand Exam.	13.5.12	..
1172/3	Kelm's Champion	D. McDonald	Ballan	26.9.12	E.A.K.
853/3	Kelvin Grove	Mitchell and O'Brien	N.S.W. Exam.	3.4.12	..
861/3	Kildare	Caffrey and Murphy	Newmarket (Special)	17.6.12	E.A.K.
976/3	King Alexander	H. Malouf	New Zealand Exam.	30.5.12	..
1114/3	King Carlos	Hansen Bros.	Numurkah	23.8.12	R.N.J.
1122/3	King George	C. Slattery	Rochester	20.8.12	E.A.K.
885/3	King George	J. G. Chaston	City Horse Bazaar	18.6.12	R.G.
890/3	King Newton	J. B. Macarthur	City Horse Bazaar	18.6.12	R.G.
1049/3	King's Own	J. Denham	New Zealand Exam.	1.6.12	..
936/3	King's Quality	M. Hearne	City Horse Bazaar	15.7.12	R.N.J.
818/3	*King's Walden Conqueror*	T. *Robson*	*English Exam.*	*15.2.12*	..
966/3	Kinross	Hon. Simon Fraser	Agricultural Offices	13.7.12	E.A.K.
908/3	Knight Burnbank	J. D. Mitchell	New Zealand Exam.	31.5.12	..
1065/3	Laddie's Pride	C. W. Raleigh	Bendigo (Special)	1.8.12	R.G.

LIST OF TERMINABLE CERTIFICATED STALLIONS—*continued.*

Cert. No.	Name of Horse.	Owner.	Parade.	Date of Examination.	Officer.
	DRAUGHTS—*continued.*				
886/3	Laird o' *Gowrie* ..	T. Kennedy ..	City Horse Bazaar	18.6.12	R.G.
948/3	Laird of Lochiel ..	O'Neil Bros. ..	Agricultural Offices	6.7.12	R.G.
977/3	Laird of Newton ..	A. L. and E. M. Walter	New Zealand Exam.	30.5.12	
917/3	Lanark's Pride ..	R. Dickinson ..	Horsham ..	2.7.12	R.N.J.
1109/3	Legislator ..	W. H. Ludemann	Dookie	19.8.12	R.N.J.
959/3	Lilburne Regent ..	W. Price-Jones ..	English Exam. ..	16.2.12	..
1116/3	Lochinvar ..	McDonald Bros. ..	Hamilton ..	22.8.12	R.G.
819/3	Long Lawford Chief	F. W. Griffin ..	English Exam. ..	15.2.12	.
1059/3	Lookout	J. Dunn ..	New Zealand Exam.	13.5.12	..
1160/3	*Lucky Charm* ..	D. Williamson ..	Ballarat ..	14.9.12	R.N.J.
863/3	Lymm Prime Minister	M. J. Caffrey ..	Newmarket (Special Exam.)	19.6.12	R.N.J.
986/3	Lyon King ..	J. White ..	City Horse Bazaar	15.7.12	R.G.
887/3	Lord Bothwell ..	W. Walter ..	City Horse Bazaar	18.6.12	E.A.K.
1144/3	Lord Carrick ..	Jelbart and Sons.	New Zealand Exam.	14.6.12	.
1042/3	Lord Churchill ..	D. Clarke ..	New Zealand Exam.	14.6.12	..
1030/3	Lord Cranbourne II.	M. & M. B. W. ..	Newmarket ..	22.7.12	R.G.
862/3	Lord Dudley ..	J. H. Hall ..	Newmarket (Special)	17.6.12	R.N.J.
888/3	Lord Elgin ..	Mitchell and O'Brien	City Horse Bazaar	18.6.12	E.A.K.
963/3	Lord Kelly ..	McCarthy Bros. ..	New Zealand Exam.	9.4.12	..
991/3	Lord McDonald ..	J. Stokes ..	City Horse Bazaar	15.7.12	E.A.K.
1167/3	*Lord Nelson* ..	*E. J. Brown* ..	*Corryong* ..	18.9.12	R.N.J.
1087/3	Lord Plunton ..	R. C. Hannah ..	Donald	7.8.12	R.N.J.
1088/3	Lord Shepherd ..	Noske Bros. ..	Ararat	9.8.12	R.G.
1176/3	McGregor's Pride ..	J. Russell, jun. ..	Orbost	3.10.12	R.N.J.
1062/3	Mack's Pride ..	R. N. Herkes ..	New Zealand Exam.	14.5.12	..
1018/3	Mac's Pride ..	Mitchell and O'Brien	City Horse Bazaar	18.7.12	Appeal Board
922/3	MacTartan ..	A. McLennan ..	Horsham ..	2.7.12	R.N.J.
835/3	*Major Cranley* ..	J. R. *Henry* ..	*Newmarket* (Special)	26.4.12	E.A.K.
889/3	Major Sentinel ..	T. Kennedy ..	City Horse Bazaar	18.6.12	R.G.
1151/3	Major's Best ..	Stuckey Bros. ..	Traralgon ..	11.9.12	R.G.
854/3	Marmion	Mitchell and O'Brien	New South Wales Exam.	3.4.12	..
1031/3	Marshall Mills ..	J. Tweedle ..	Newmarket ..	22.7.12	E.A.K.
993/3	Maxwell	J. Stokes ..	City Horse Bazaar	15.7.12	E.A.K.
836/3	Military	J. R. Henry ..	Newmarket (Special Exam.)	26.4.12	E.A.K.
1169/3	Milton Park ..	Bain Bros. ..	Yarram ..	18.8.12	R.G.
1092/3	*Model Mills* ..	D. *Johns* ..	Warragul ..	16.8.12	R.N.J.
864/3	Moira Everlasting ..	J. H. Hall ..	Newmarket (Special)	17.6.12	E.A.K.
932/3	Mount Everest ..	J. A. McKenzie ..	Agricultural Offices	13.7.12	R.N.J.
837/3	Newton Laddie ..	J. R. Henry ..	Newmarket (Special Exam.	26.4.12	E.A.K.
1173/3	Newton's Best ..	W. H. Bell ..	Wangaratta (Special Exam.)	25.9.12	R.G.
891/3	Noble Lad ..	Mitchell and O'Brien	City Horse Bazaar	18.6.12	E.A.K.
838/3	Noble Shepherd ..	D. R. McLeod ..	Newmarket (Special)	26.4.12	E.A.K.
1004/3	Pacific	S. G. Jaffrey ..	City Horse Bazaar	22.7.12	W.J.C.
902/3	Pioneer	Mitchell and O'Brien	Melbourne (Special)	25.6.12	R.G.
1135/3	*Politician*	*A. Dunning* ..	*Tungamah* ..	27.8.12	E.A.K.
848/3	Premier Carmichael	Paterson Bros. ..	Romsey (Special) Exam.)	10.5.12	R.G.
994/3	Premier Dowling .	A. Davidson ..	City Horse Bazaar	15.7.12	E.A.K.
865/3	Premier Prince	McDonald and Son	Newmarket (Special)	17.6.12	E.A.K.
967/3	President Lincoln ..	Jas. Cobain ..	Agricultural Offices	13.7.12	R.G.
923/3	*Propeller*	W. J. Pilgrim ..	Horsham ..	3.7.12	R.N.J.
1005/3	Pride of Gladstone	S. J. Lynn ..	New Zealand Exam.	30.5.12	..

LIST OF TERMINABLE CERTIFICATED STALLIONS—*continued.*

Cert. No.	Name of Horse.	Owner.	Parade.	Date of Examination.	Officer.
		DRAUGHTS—*continued.*			
978/3	Pride of Milton ..	J. McKenzie ..	New Zealand Exam.	30.5.12	..
925/3	Pride of the Valley..	W. McGaffin ..	City Horse Bazaar	16.7.12	R.G.
1032/3	Prince	A. McDonald ..	Newmarket ..	22.7.12	R.N.J.
1060/3	Prince Erskine ..	J. Tyres ..	New Zealand Exam.	13.5.12	..
892/3	Prince Harold ..	Miss B. Reid ..	City Horse Bazaar	18.6.12	E.A.K.
1009/3	Prince Imperial ..	A. Collins ..	New Zealand Exam.	21.5.12	..
1155/3	Prince of Albyn ..	P. O'Donnell ..	Kyneton ..	10.9.12	R.N.J.
893/3	Prince of Fashion ..	W. Walters	City Horse Bazaar	18.6.12	E.A.K.
1101/3	Prince William ..	W. R. Boys ..	Benalla ..	15.8.12	R.G.
1063/3	Prince William ..	J. and S. Kuse ..	Quambatook ..	30.7.12	R.G.
1015/3	Real McKay ..	J. Patrick ..	New Zealand Exam.	1.6.12	..
1091/3	Redhill Chief ..	W. Howe ..	Inglewood ..	13.8.12	R.N.J.
936/3	Repeater	F. W. Sallmann ..	Dimboola (Special Parade)	2.7.12	E.A.K.
995/3	Robertson's Fancy	T. Mann ..	City Horse Bazaar	15.7.12	R.G.
1177/3	Robin's Pride ..	H. Cameron ..	Orbost	3.10.12	R.N.J.
1170/3	Roseneath King ..	J. Jamieson ..	Yarram ..	19.9.12	R.G.
1041/3	Royal Agitator ..	R. Wilson ..	Newmarket ..	23.7.12	R.N.J.
963/3	Royal Charlie ..	Le Court Bros. ..	Agricultural Offices	13.7.12	R.G.
1033/3	Royal Churchill ..	H. Wright ..	Newmarket ..	22.7.12	R.N.J.
894/3	Royal Escort ..	Capt. Stewart Balmain	City Horse Bazaar	18.6.12	R.G.
788/3	Royal Gartley ..	S. Knight ..	Warrnambool (Special Exam.)	28.10.12	R.G.
866/3	Royal Gem ..	R. J. Wakeham ..	Newmarket (Special)	17.6.12	E.A.K.
821/3	Royal King ..	F. D. Huff ..	Illowa (Special)	16.4.12	E.A.K.
1118/3	Royal Link ..	H. A. Jackson ..	Casterton ..	21.8.12	R.G.
1119/3	Royal Main ..	Stock Bros. ..	Casterton ..	21.8.12	R.G.
895/3	Royal McGregor ..	F. H. Dunne ..	City Horse Bazaar	18.6.12	R.G.
1156/3	Royal Palmer ..	P. McMiniman ..	Kyneton ..	10.9.12	R.N.J.
867/3	Royal Pride ..	W. P. Bowman ..	Newmarket (Special)	17.6.12	E.A.K.
1161/3	Royal Prince ..	Green Bros.	Ballarat ..	14.9.12	R.N.J.
915/3	Royal Robin ..	J. H. Hall ..	Horsham ..	2.7.12	R.N.J.
1046/3	Royal Salute ..	M. J. Ryan ..	New Zealand Exam.	14.6.12	..
839/3	Royal Salute ..	T. Opie ..	Newmarket (Special)	26.4.12	E.A.K.
935/3	Royal Sovereign ..	Caffrey and Murphy	City Horse Bazaar	15.7.12	R.N.J.
1157/3	*Royal Sovereign* ..	*E. Bailey* ..	*Camperdown* ..	11.9.12	E.A.K.
969/3	Royal Standard ..	H. S. Graham ..	Agricultural Offices	13.7.12	E.A.K.
1103/3	Royalty	H. Pearce ..	Dimboola ..	16.8.12	E.A.K.
840/3	Royal Wattie ..	J. Kavanagh ..	Newmarket (Special)	24.6.12	E.A.K.
849/3	Runnymede ..	F. W. Grigg ..	Newmarket (Special)	4.6.12	E.A.K.
1141/3	Sampson	Winter-Irving and Allison	Royal Show ..	2.9.12	R.G.
1040/3	Samson	V. C. Kurrle ..	Newmarket ..	23.7.12	R.N.J.
1031/3	Sandy Mac ..	R. Biggar ..	Newmarket ..	22.7.12	E.A.K.
1035/3	Sandy McNeil ..	E. Roberts ..	Newmarket ..	22.7.12	E.A.K.
1162/3	Scotchman ..	Strawhorn and Sons	Ballarat ..	14.9.12	R.N.J.
1178/3	Scotland	Nixon Bros. ..	Orbost	3.10.12	R.N.J.
1153/3	Scotland's Fancy ..	J. Holmes ..	Colac	13.9.12	E.A.K.
863/3	Scotland's Pride ..	J. R. MacKenzie	Newmarket (Special)	17.6.12	E.A.K.
1131/3	Scotland Yet ..	W. Gardner ..	Yea	29.8.12	E.A.K.
1095/3	Scottie	H. Schmidt ..	Kaniva	15.8.12	E.A.K.
1036/3	Scottish Model ..	H. McLaren ..	Newmarket ..	22.7.12	R.N.J.
1139/3	Seafield	J. Egan.. ..	Mansfield ..	29.8.12	E.A.K.
1082/3	Seddon's Pride ..	Parson Bros. ..	Elmore	9.8.12	E.A.K.
841/3	Shepherd Baldie ..	J. R. Henry ..	Newmarket (Special)	26.4.12	E.A.K.
1110/3	Shepherd's Pride ..	P. A. Ferrari ..	Nathalia ..	20.8.12	R.N.J.
1045/3	Shepherd Yet ..	O. Maroske ..	New Zealand Exam.	14.6.12	..
1123/3	Silver Style ..	H. Gibson ..	Rochester ..	20.8.12	E.A.K.

LIST OF TERMINABLE CERTIFICATED STALLIONS—*continued.*

Cert. No.	Name of Horse.	Owner.	Parade.	Date of Examination.	Officer.
		DRAUGHTS—*continued.*			
1142/3	Sir Colin ..	McKenzie Bros. ..	Royal Show ..	2.9.12	R.G.
933/3	Sir Daniel ..	J. Drain ..	Agricultural Offices	13.7.12	R.N.J.
928/3	Sir Donald ..	H. W. E. Link ..	Horsham ..	3.7.12	R.N.J.
997/3	Sir Douglas ..	W. McGaffin ..	City Horse Bazaar	15.7.12	R.G.
925/3	Sir Edward ..	E. A. Rethus ..	Horsham ..	3.7.12	R.N.J.
949/3	Sir Norman's Fancy	R. Walton ..	Agricultural Offices	6.7.12	R.G.
1066/3	Sir Samuel ..	J. T. Collins ..	Bendigo (Special)	1.8.12	R.G.
1084/3	Sir Wilfred ..	A. J. Mackay ..	St. Arnaud ..	6.8.12	R.N.J.
1050/3	Sir William ..	J. Moffatt ..	New Zealand Exam.	1.6.12	..
934/3	Southland's Glory ..	P. L. Marum ..	Agricultural Offices	13.7.12	R.N.J.
1058/3	Speculation ..	J. Bodey ..	New Zealand Exam.	10.4.12	..
950/3	Springburn ..	A. L. Waddell ..	Agricultural Offices	6.7.12	R.G.
1111/3	Statesman ..	John Crane ..	Nathalia ..	20.8.12	R.N.J.
1120/3	Steel Link ..	C. Rhodes ..	Casterton ..	21.8.12	R.G.
1008/3	Stewart's Fancy ..	J. Christie ..	New Zealand Exam.	17.6.12	..
1107/3	*Superior* ..	*T. O'Brien* ..	*Cobram* ..	23.8.12	*R.N.J.*
845/3	Superior Baron ..	T. Scott ..	Newmarket (Special)	1.5.12	E.A.K.
1037/3	Taieri Chief ..	J. Burns ..	Newmarket ..	22.7.12	R.G.
918/3	Taieri's Pride ..	W. Parish ..	Horsham ..	2.7.12	R.N.J.
1090/3	Tam McGregor ..	W. J. Hill ..	Inglewood ..	13.8.12	R.N.J.
1064/3	Tam McGregor ..	T. Walker ..	Boort	30.7.12	R.G.
905/3	Tarnacre Tom ..	W. Price-Jones ..	English Exam. ..	21.2.12	..
1143/3	The Baron ..	J. R. Glenn ..	Royal Show ..	2.9.12	R.G.
896/3	The Count.. ..	Mitchell and O'Brien	City Horse Bazaar	18.6.12	R.G.
897/3	The Favourite ..	J. C. Rockliffe ..	City Horse Bazaar	18.6.12	E.A.K.
951/3	The Favourite ..	J. Denyer ..	Agricultural Offices	6.7.12	R.G.
979/3	The *General* ..	J. W. Blair ..	New Zealand Exam.	30.5.12	..
898/3	The Knight ..	E. R. Morton ..	City Horse Bazaar	18.6.12	R.G.
941/3	The Laird ..	C. Falkenburg ..	Horsham ..	3.7.12	E.A.K
1144/3	The Marquis ..	Young and Sons	Royal Show ..	2.9.12	R.N.J.
899/3	The Newton ..	Mitchell and O'Brien	City Horse Bazaar	18.6.12	E.A.K.
1067/3	The Premier ..	A. Borland ..	Bendigo (Special)	1.8.12	R.G.
900/3	The Ranter ..	Mitchell and O'Brien	City Horse Bazaar	18.6.12	E.A.K.
1038/3	The *Schoolmaster* ..	W. *McElligott* ..	*Newmarket* ..	22.7.12	E.A.K.
942/3	The Settler ..	C. D. Urquhart ..	Horsham ..	3.7.12	E.A.K.
1112/3	The Stewart ..	A. Colvin ..	Nathalia ..	20.8.12	R.N.J.
820/3	The Vicar ..	T. Robson ..	English Exam. ..	1.3.12	..
904/3	Titch	W. Price-Jones ..	English Exam. ..	15.2.12	..
846/3	Titiroa Baron ..	Harkes Bros. ..	Newmarket (Special Exam.)	1.5.12	E.A.K.
1148/3	Tom McDonald ..	A. H. Davidson ..	New Zealand Exam.	13.5.12	..
1056/3	Trafalgar	J. Bodey	New Zealand Exam.	10.4.12	.
1098/3	True Blue ..	E. Fitzgerald ..	Geelong ..	13.8.12	E.A.K.
844/3	Tweedbank ..	D. Gardiner ..	Newmarket (Special)	26.4.12	E.A.K.
842/3	Tweed Boy ..	Robertson and Mackenzie	Newmarket (Special)	26.4.12	E.A.K.
1145/3	Twilight	R. N. Scott ..	Royal Show ..	2.9.12	R.N.J.
998/3	Ulimaroa	F. Jones ..	City Horse Bazaar	16.7.12	R.N.J.
960/3	Umberslade Blaze ..	W. Price-Jones ..	English Exam. ..	27.3.12	..
961/3	Umberslade Friar ..	W. Price-Jones ..	English Exam. ..	27.3.12	..
962/3	Umberslade Senator	W. Price-Jones ..	English Exam. ..	27.3.12	..
1125/3	Upward	Dunlop Bro.. ..	Tatura	22.8.12	E.A.K.
1010/3	Waironga *Duke* ..	J. W. *Blair* ..	New Zealand Exam.	17.6.12	..
921/3	Warkworth's Pride	G. Harris ..	Horsham ..	2.7.12	R.N.J.
869/3	Wedderburn ..	J. H. Hall ..	Newmarket (Special)	17.6.12	E.A.K.
843/3	Wee McDougall ..	J. R. Henry ..	Newmarket (Special)	26.4.12	E.A.K.
1039/3	Wee McGregor ..	E. Roberts ..	Newmarket ..	22.7.12	E.A.K.
901/3	Wigtonshire ..	Burton Bros. ..	City Horse Bazaar	18.6.12	R.G.

LIST OF TERMINABLE CERTIFICATED STALLIONS—*continued.*

Cert. No.	Name of Horse.	Owner.	Parade.	Date of Examination.	Officer
		DRAUGHTS—*continued.*			
993/3	Willie Mac ..	Mitchell and O'Brien	City Horse Bazaar	16.7.12	R.N.J.
1165/3	Young Clyde ..	J. Harkins ..	Bacchus Marsh ..	14.9.12	R.G.
985/3	Young Dunsmore's Patriarch	J. Sullivan ..	City Horse Bazaar	16.7.12	E.A.K.
1163/3	Young Gladbrook ..	White Bros. ..	Ballarat ..	14.9.12	R.N.J.
1128/3	Young Jack ..	P. J. Quinlan ..	Shepparton ..	23.8.12	E.A.K.
1071/3	Young Lanark ..	Schultz Bros. ..	Warracknabeal ..	2.8.12	E.A.K.
1102/3	Young Lochinvar ..	J. Moodie ..	Benalla ..	15.8.12	R.G.
		LIGHT HORSES.			
1099/3	Abbey Isles ..	A. Habel ..	Mmyip	8.8.12	R.G.
1093/3	All Kilts	G. Gibson ..	Myrtleford ..	14.8.12	R.G.
1183/3	Almont B. ..	R. Hutton ..	Agricultural Offices	9.10.12	R.N.J.
1152/3	Ariel	Boddy and Johnston	Whittlesea ..	9.9.12	R.N.J.
1158/3	Auburn Prince ..	S. McCartney ..	Ballarat ..	14.9.12	R.N.J.
1096/3	Belmont Bells ..	W. Day.. ..	Geelong ..	13.8.12	E.A.K.
1126/3	Brooderwood ..	C. R. Dunlop ..	Shepparton ..	23.8.12	E.A.K.
914/3	Charles Derby ..	A. Greig ..	Horsham ..	2.7.12	R.N.J.
1159/3	Cosmo	J. Burke ..	Ballarat ..	14.9.12	R.N.J.
1075/3	Dark Havelock ..	G. Plant ..	Pyramid ..	5.8.12	E.A.K.
1079/3	Elect	W. McDonald ..	Swan Hill ..	7.8.12	E.A.K.
1138/3	Emulous	G. Bourne ..	Royal Show ..	2.9.12	W.J.C.
1146/3	Galtrim	J. H. Fox ..	Sea Lake (Special)	29.8.12	G.H.
1054/3	Harry Almont ..	C. Douglas, jun. ..	Charlton ..	18.7.12	G.H.
1081/3	Honesty	J. O'Sullivan ..	Elmore	9.8.12	E.A.K.
1168/3	Micky Free ..	John Ellis ..	Warragul ..	12.9.12	E.A.K.
1147/3	Napoleon	A. McFarlane ..	Sea Lake (Special)	29.8.12	G.H.
1124/3	Patriarch	R. Dunbar ..	Tatura	22.8.12	E.A.K.
1174/3	Prince Royal ..	A. McDonald ..	Kilmore ..	26.9.12	R.G.
1181/3	Ribbonwood's Pride	J. S. Folland ..	Ballarat Show (Special Exam.)	14.11.12	E.A.K.
1097/3	Titanic	W. Day.. ..	Geelong ..	13.8.12	E.A.K.
1134/3	Young Majestic ..	J. Moroney ..	Yarrawonga ..	27.8.12	E.A.K.
		PONIES.			
1171/3	Ballyrogan ..	S. Samlwith	Ballan	26.9.12	E.A.K.
1150/3	Dandy Lad ..	Stuckey Bros. ..	Traralgon ..	11.9.12	R.G.
1185/3	Every Time ..	Anderson Bros. ..	Berwick (Special)	19.11.12	E.A.K.
993/3	Hauteur	R. V. Kelly ..	City Horse Bazaar	15.7.12	E.A.K.
1069/3	King Bee	W. T. McAlpine ..	Hopetoun ..	30.7.12	E.A.K.
1074/3	King Owybee ..	M. Troy ..	Kerang	9.8.12	E.A.K.
1166/3	Silverton	D. McDonald ..	Camperdown (Special)	28.11.12	E.A.K.
1187/3	Starlight	W. Inglis ..	Agricultural Offices	3.12.12	E.A.K.
1175/3	Young Deisha ..	M. Deering ..	Morwell ..	1.10.12	R.N.J.

(Two-year-old Certificates expiring 30th June, 1913.)

DRAUGHTS.

Cert. No.	Name of Horse.	Owner.	Parade.	Date of Examination.	Officer
183/2	Argyle	R. McKenzie ..	Warracknabeal ..	2.8.12	E.A.K.
197/2	Baron McKie ..	Paterson Bros. ..	Romsey.. ..	16.9.12	E.A.K.
189/2	Baron's Own ..	F. M. Clement ..	Euroa	16.8.12	R.G.
191/2	Bay Rock ..	A. Mitchell ..	Casterton ..	21.8.12	R.G.
163/2	*Bonny Boy* ..	*O. Bodey* ..	*Horsham* ..	3.7.12	E.A.K.
165/2	Brown Boy ..	O. Warke ..	Horsham ..	2.7.12	R.N.J.
164/2	Brown Cashier ..	A. and J. Young..	Horsham ..	2.7.12	R.N.J.
184/2	Cedric	K. Cameron ..	Warracknabeal ..	2.8.12	E.A.K.
199/2	Commodale Lad ..	W. Smith ..	Smeaton ..	12.9.12	R.N.J.
166/2	Clydebank ..	Nuske Bros. ..	Horsham ..	3.7.12	E.A.K.
181/2	Clyde Boy ..	J. Little ..	Beulah	1.8.12	E.A.K.
203/2	Crown Jewel ..	W. Buckley ..	Morwell ..	1.10.12	R.N.J.
167/2	Crown Top ..	O. Maroske ..	Horsham ..	2.7.12	R.N.J.
179/2	Dunsmore Nigger ..	J. Henry ..	Newmarket ..	22.7.12	E.A.K.
177/2	Explosive ..	Parish and Huf ..	Horsham ..	2.7.12	R.N.J.
202/2	Fine View Tenant ..	R. W. Laidlaw ..	Beaufort ..	27.9.12	E.A.K.

LIST OF TERMINABLE CERTIFICATED STALLIONS—*continued.*

Cert. No.	Name of Horse.	Owner.	Parade.	Date of Examination.	Officer.
	DRAUGHTS—*continued.*				
204/2	*General*	H. McNab ..	Morwell ..	1.10.12	R.N.J.
168/2	Herd Lad ..	H. Walsgott ..	Horsham ..	2.7.12	R.N.J.
169/2	Johnny Souter ..	Parish and Huf ..	Horsham ..	2.7.12	R.N.J.
192/2	King Marshall ..	Baker Bros.	Rutherglen ..	26.8.12	E.A.K.
194/2	Lochinvar ..	W. R. Clarke ..	Royal Show ..	2.9.12	R.G.
170/2	Locksley	O. Maroske ..	Horsham ..	3.7.12	E.A.K.
200/2	Lord Ailsa ..	J. Jamieson ..	Yarram ..	19.9.12	R.G.
171/2	Lord Cashier ..	A. and J. Young..	Horsham ..	2.7.12	R.N.J.
172/2	Minoru	H. Young ..	Borsham ..	2.7.12	R.N.J.
190/2	Percy II. .. .	J. McFarlane ..	Hamilton ..	22.8.12	R.G.
205/2	Prince Aldie ..	Brock Bros. ..	Morwell.. ..	1.10.12	R.N.J.
195/2	Prince Charlie .	Pedretti Bros. ..	Daylesford ..	13.9.12	R.N.J.
193/2	Prince Edward ..	King and Sons ..	Rutherglen ..	26.8.12	E.A.K.
188/2	Prince George ..	M. Bodey ..	Nhill	14.8.12	E.A.K.
182/2	*Prince Royal* ..	*Jas. Little* ..	*Beulah*	1.8.12	E.A.K.
201/2	Professor	J. Egan.. .	Ballan	26.9.12	E.A.K.
173/2	Ringmaster ..	D. McDonald ..	Horsham ..	3.7.12	R.N.J.
174/2	Robert Cashier ..	A. and J. Young..	Horsham ..	2.7.12	R.N.J.
160/2	Royal Blend ..	F. W. Borgelt ..	Illowa (Special) ..	16.4.12	E.A.K.
178/2	*Royal Dick* ..	*M. Ewart* ..	*City Horse Bazaar*	16.7.12	*R.G.*
198/2	Royal Ettrick ..	J. Egan.. ..	Warrnambool ..	12.9.12	E.A.K.
206/2	Royal Plumpton ..	H. Hall ..	Agricultural Offices	1.3.13	R.N.J.
162/2	Royal Prince ..	J. Gooden ..	Illowa (Special) ..	16.4.12	E.A.K.
161/2	Royal Saxon ..	R. Grafter ..	Illowa (Special) ..	16.4.12	E.A.K.
159/2	Royal Title ..	R. W. Dunne ..	Illowa (Special) ..	16.4.12	E.A.K.
175/2	Ruskin	Parish and Huf ..	Horsham ..	2.7.12	R.N.J.
187/2	Shepherd	Geelong Harbour Trust	Geelong ..	13.8.12	E.A.K.
176/2	Shepherd Oak ..	E. Wahlenburg ..	Horsham ..	2.7.12	R.N.J.
180/2	Sir Lawrence ..	H. Knight ..	Newmarket ..	22.7.12	E.A.K.
186/2	Warrego	J. F. Pinn ..	Myrtleford ..	14.8.12	R.G.
185/2	Young Lochiel ..	H. Lee	Clunes	14.8.12	R.N.J.
	PONIES.				
196/2	Constellation ..	Gooden Bros. ..	Port Fairy ..	10.9.12	E.A.K.

STALLION PARADES, 1913.

TIME TABLE

District and Date.	Place.	Time.	Officer Arrives.	Officer Leaves.
SPECIAL.				
14th to 19th July ..	City Horse Bazaar	10. a.m.		
21st to 25th July ..	Newmarket Horse Bazaar	10 a.m.		
Every Saturday, 28th June to 13th December	Agricultural Offices	10 a.m. to 12 noon		
WIMMERA No. 1.				
1st and 2nd July ..	Horsham ..	10 a.m. ..	11.59 p.m. (30th June)	2.54 a.m. (3rd)
CENTRAL No. 1.				
Thursday, 24th July	Bendigo ..	1.30 p.m.	11.20 a.m. ..	3.15 p.m.
MALLEE No. 1.				
Tuesday, 29th July ..	Quambatook	9.30 a.m.	6.35 p.m. (28th)	10.47 a.m
Tuesday, 29th July ..	Boort ..	3 p.m. ..	12.20 p.m. ..	6.10 a.m. (30th)
Wednesday, 30th July	Charlton ..	2 p.m. ..	9.17 a.m. ..	4.28 p.m.
Thursday, 31st July	Sea Lake ..	2 p.m. ..	9.55 p.m. (30th)	6.40 a.m. (1st Aug.)
Friday, 1st Aug. ..	Wycheproof	10 a.m. ..	10 a.m. ..	11.20 a.m.
WIMMERA No. 2.				
Tuesday, 29th July ..	Hopetoun ..	10.15 a.m.	10.15 a.m. ..	11.20 a.m.
Wednesday, 30th July	Murtoa ..	2 p.m. ..	12.50 p.m. (29th)	6.20 p.m.
Thursday, 31st July	Beulah ..	10.30 a.m.	10.10 p.m. (30th)	12.40 p.m.
Friday, 1st Aug. ..	Warracknabeal	1.30 p.m.	2.25 p.m. (31st)	2.55. p.m.
WIMMERA No. 3.				
Wednesday, 30th July	Goroke ..	3.30 p.m.	2.20 p.m. ..	6.30 a.m. (31st)
Thursday, 31st July	Edenhope ..	3 p.m. ..	12 noon ..	1.30 p.m. (1st Aug.)
WIMMERA No. 4.				
Tuesday, 5th Aug. ..	Balmoral ..	3 p.m. ..	11.30 a.m. ..	11 a.m. (6th)
Thursday, 7th Aug. ..	Minyip ..	2 p.m. ..	6.53 a.m. ..	4.8 p.m.

STALLION PARADES, TIME TABLE—*continued.*

District and Date.	Place.	Time.	Officer Arrives.	Officer Leaves.
MALLEE No. 2.				
Monday, 4th Aug. ..	Heathcote ..	2 p.m. ..	11.41 a.m. ..	8.17 p.m.
Tuesday, 5th Aug. ..	St. Arnaud	3.30 p.m.	3.22 p.m.	9.42 p.m.
Wednesday, 6th Aug.	Donald ..	2 p.m. ..	10.52 p.m. (5th)	6 p.m.
Thursday, 7th Aug. ..	Watchem ..	2 p.m. ..	7.27 p.m. (6th)	7.10 p.m.
Friday, 8th Aug. ..	Birchip ..	3 p.m. ..	7.45 p.m. (7th)	2.55 a.m. (9th)
NORTH-EASTERN No. 1.				
Monday, 4th Aug. ..	Rutherglen	2 p.m. ..	1.48 p.m. ..	3.22 p.m
Tuesday, 5th Aug. ..	Yarrawonga	11 a.m. ..	10.22 p.m. ..	2.45 p.m.
Tuesday, 5th Aug. ..	Tungamah ..	3.45 p.m.	3.28 p.m. ..	7.45 a.m. (6th)
Wednesday, 6th Aug.	Myrtleford ..	3 p.m. ..	2.54 p.m. ..	7.17 a.m. (7th)
Thursday, 7th Aug. ..	Wangaratta	2 p.m. ..	9.16 a.m. ..	4.37 p.m.
Friday, 8th Aug. ..	Benalla ..	2 p.m. ..	5.23 p.m. (7th)	5.35 p.m.
NORTH-EASTERN No. 2.				
Monday, 11th Aug. ..	Euroa ..	3 p.m. ..	10.24 a.m. ..	6.32 p.m.
Tuesday, 12th Aug. ..	Seymour ..	10 a.m. ..	7.59 p.m. (11th)	12.15 p.m.
Wednesday, 13th Aug.	Dimboola ..	3 p.m. ..	12.42 a.m. ..	2.18 a.m. (14th)
Thursday, 14th Aug.	Beaufort ..	3 p.m. ..	6.31 a.m. ..	5.28 p.m.
Friday, 15th Aug. ..	Frankston ..	3 p.m. ..	2.38 p.m. ..	5.50 p.m.
MALLEE No. 5.				
Monday, 11th Aug. ..	*Pyramid* ..	3 p.m. ..	2.36 p.m. ..	2.36 p.m. (12th)
Wednesday, 13th Aug.	Swan Hill ..	2 p.m ..	6 16 p.m. (12th)	11 a.m. (14th)
Thursday, 14th Aug.	Kerang ..	2 p.m. ..	12.39 p.m. ..	6 a.m. (15th)
Friday, 15th Aug. ..	Elmore ..	2 p.m. ..	1.11 p.m. ..	5.22 p.m.
NORTH-EASTERN No. 3.				
Monday, 11th Aug. ..	Dookie ..	2 p.m. ..	12.52 p.m. ..	1.11 p.m.
Tuesday, 12th Aug.	Nathalia ..	2 p.m. ..	1.40 p.m. ..	3.25 p.m.
Wednesday, 13th Aug.	Numurkah	2 p.m. ..	4.10 p.m. (12th)	4.43 p.m.
Thursday, 14th Aug.	Murchison ..	9.30 a.m.	6.53 p.m. (13th)	10.58 a.m.
Thursday, 14th Aug.	Rushworth	2 p.m. ..	11.48 a.m. ..	5.20 p.m.
Friday, 15th Aug. ..	Cobram ..	2 p.m. ..	1.57 p.m. ..	3.10 p.m.
WESTERN No. 1.				
Monday, 18th Aug. ..	Ararat ..	3 p.m. ..	1.29 p.m. ..	7.15 a.m. (19th)
Tuesday, 19th Aug. ..	Hamilton ..	2 p.m. ..	9.55 a.m. ..	6.20 p.m.
Wednesday, 20th Aug.	Coleraine ..	10 a.m. ..	7.35 p.m. (19th)	11 a.m. (Driving)
Wednesday, 20th Aug.	Casterton ..	3 p.m. ..	1 p.m. (Driving)	8.15 a.m. (21st)
Thursday, 21st Aug.	Portland ..	2 p.m. ..	1.2 p.m. ..	3 p.m.
Friday, 22nd Aug. ..	Penshurst ..	2 p.m. ..	7.10 p.m. (21st)	5.4 p.m.

STALLION PARADES, TIME TABLE—*continued.*

District and Date.	Place.	Time.	Officer Arrives.	Officer Leaves.
GOULBURN VALLEY No. 1				
Monday, 18th Aug. ..	Castlemaine	2 p.m. ..	10.20 a.m. ..	10.32 a.m. (19th)
Tuesday, 19th Aug.	Rochester ..	2 p.m. ..	1.36 p.m. ..	9.57 p.m.
Wednesday, 20th Aug.	Echuca ..	1 p.m. ..	10.23 p.m. (19th)	2.55 p.m.
Thursday, 21st Aug.	Tatura ..	10 a.m. ..	5.36 p.m. (20th)	11.42 a.m.
Thursday, 21st Aug.	Kyabram ..	2 p.m. ..	12.50 p.m. ..	4.20 p.m.
Friday, 22nd Aug. ..	*Shepparton* ..	*1 p.m.* ..	*8.23 p.m. (21st)*	*5.49 p.m.*
WIMMERA No. 5.				
Monday, 18th Aug. ..	Melton ..	11 a.m ..	8.41 a.m ..	1.21 p.m.
Tuesday, 19th Aug. ..	Geelong ..	2 p.m. ..	12.49 p.m. ..	5.25 p.m.
Wednesday, 20th Aug.	Nhill ..	2 p.m. .	1.31 a.m. ..	7.30 a.m. (21st)
Thursday, 21st Aug.	Kaniva ..	2 p.m. .	8.50 a.m. ..	5.52 a.m. (22nd)
Friday, 22nd Aug. ..	Jeparit ..	2 p.m. .	11.33 a.m. ..	9.53 p.m.
CENTRAL No. 2.				
Monday, 25th Aug. ..	Stawell ..	3 p.m. ..	2.38 p.m. ..	10.13 p.m.
Tuesday, 26th Aug. ..	Rainbow ..	3 p.m. .	1.25 p.m. ..	8 p.m.
Wednesday, 27th Aug.	Maryborough	2 p.m. .	10.5 a.m. ..	6.5 a.m. (28th)
Thursday, 28th Aug.	Inglewood ..	11 a.m. ..	8.40 a.m. ..	2.10 p.m.
Thursday, 28th Aug.	Dunolly ..	4 p.m. ..	3.50 p.m. ..	9.17 a.m. (29th)
Friday, 29th Aug. ..	Clunes ..	2 p.m. ..	1.42 p.m. ..	3 p.m.
NORTH-EASTERN No. 4.				
Monday, 25th Aug. ..	Alexandra ..	2 p.m. ..	12.45 p.m. ..	4.40 p.m.
Tuesday, 26th Aug.	Yea ..	9.30 a.m.	6.23 p.m. (25th)	10.35 a.m.
Tuesday, 26th Aug.	Mansfield ..	2 p.m. ..	1.50 p.m. ..	3.30 p.m.
Thursday, 28th Aug.	Mildura ..	2 p.m. .	8 40 a.m. ..	6.30 a.m. (29th)
WESTERN No. 2.				
Monday, 25th Aug. ..	Terang ..	2 p.m. ..	12.44 p.m. ..	9.53 p.m.
Tuesday, 26th Aug. ..	*Port Fairy* ..	*2 p.m.* ..	*12.19 a.m.* ..	*5.45 a.m. (27th)*
Wednesday, 27th Aug.	Camperdown	2 p.m. ..	8.46 a.m. ..	9.18 p.m.
Thursday, 28th Aug.	Warrnambool	2 p.m. ..	10.58 p.m. ..	7.11 a.m. (29th)
Friday, 29th Aug. ..	Colac ..	2 p.m. ..	10.9 a.m. ..	6.59 p.m.
Saturday, 30th Aug.	Werribee ..	10 a.m. ..	9.58 p.m. ..	1.34 p.m.
GIPPSLAND No. 1.				
Monday, 1st Sept. ..	Mirboo ..	2 p.m. ..	1.50 p.m. ..	4.15 p.m.
Tuesday, 2nd Sept. ..	Morwell ..	10 a.m. ..	5.55 p.m. (1st)	11.57 a.m.
Tuesday, 2nd Sept. ..	Traralgon ..	2 p.m. ..	12.10 p.m. ..	12.20 p.m. (3rd)
Wednesday, 3rd Sept.	Bairnsdale ..	3.30 p.m.	3.25 p.m. ..	5.40 a.m. (4th)
Thursday, 4th Sept.	Maffra ..	2 p.m. ..	7.14 a.m. ..	7.18 a.m.
Friday, 5th Sept. ..	*Bunyip* ..	*2 p.m.* ..	*11.25 a.m.* ..	*4.26 p.m.*

STALLION PARADES, TIME TABLE—*continued.*

District and Date.	Place.	Time.	Officer Arrives.	Officer Leaves.
GIPPSLAND No. 2.				
Monday, 1st Sept. ..	Foster ..	12.45 p.m.	12.38 p.m. ..	2.21 p.m.
Monday, 1st Sept. ..	Leongatha ..	4 p.m. ..	3.56 p.m. ..	7.25 a.m. (2nd)
Tuesday, 2nd Sept. ..	Lang Lang	3 p.m. ..	9.25 a.m. ..	7.26 p.m.
Wednesday, 3rd Sept.	Korumburra	11 a.m. ..	8.30 p.m. (2nd)	10.42 a.m. (4th)
Thursday, 3rd Sept.	Yarram ..	[illegible] p.m. ..	3.45 p.m. ..	10.55 a.m. (5th)
GIPPSLAND No. 3.				
Monday, 1st Sept ..	South Yan Yean	2 p.m. ..	12.24 p.m. ..	8.23 p.m.
Tuesday, 2nd Sept. ..	Lilydale ..	2 p.m. ..	1.34 p.m. ..	5.35 p.m.
Wednesday, 3rd Sept.	Dandenong	3 p.m. ..	2.27 p.m. ..	5.21 p.m.
Thursday, 4th Sept.	Trafalgar ..	11 a.m. ..	8.8 p.m. (3rd) ..	2.20 p.m.
Thursday, 4th Sept.	Warragul ..	3 p.m. ..	3 p.m. ..	10.57 a.m.
Friday, 5th Sept. ..	Berwick ..	2 p.m. ..	12.16 p.m. ..	5.24 p.m.
CENTRAL No. 3.				
Monday, 8th Sept. ..	Romsey ..	2 p.m. ..	10.10 a.m. ..	5.25 p.m.
Tuesday, 9th Sept. ..	Kyneton ..	2 p.m. ..	8.21 p.m. (8th)	8.32 p.m. (10th)
Wednesday, 10th Sept.	*Daylesford* ..	*2 p.m.* ..	*11.59 a.m.* ..	*7.8 a.m. (11th)*
Thursday, 11th Sept.	Smeaton ..	2 p.m. ..	9.20 a.m. ..	4.30 p.m.
Friday, 12th Sept. ..	Ballan ..	2 p.m. ..	8.21 p.m. (11th)	6.33 p.m.
Saturday, 13th Sept.	Ballarat ..	2 p.m. ..	7.23 p.m. (12th)	7.10 p.m.
NORTH-EASTERN No. 5.				
Monday, 8th Sept. ..	Wodonga ..	2 p.m. ..	1.39 p.m. ..	3.15 p.m.
Tuesday, 9th Sept. ..	Tallangatta	2 p.m. ..	4.36 p.m. (8th)	5 a.m. (10th)
Wednesday, 10th Sept.	Corryong ..	3.30 p.m.	3.30 p.m. ..	7 a.m. (11th)
CENTRAL No. 4.				
Wednesday, 17th Sept.	Bacchus Marsh	11 a.m. ..	9 a.m. ..	12.59 p.m.
Thursday, 18th Sept.	*Kilmore* ..	*2 p.m.* ..	*9.8 a.m.* ..	*8.40 p.m.*
Saturday, 20th Sept	Royal Show Grounds	9 a.m. to 11 a.m.		
Wednesday, 8th Oct.	Omeo ..	3 p.m. ..	6.30 p.m. (7th)	6.30 a.m. (9th)
Tuesday, 7th Oct. ..	Orbost ..	3 p.m. ..	2 p.m. ..	8.2 a.m. (10th)

ALKALI IN SOILS.

By John W. Paterson, B.Sc., Ph.D.

Introduction.

The main bulk of a soil is insoluble in water. But a soil always contains a certain quantity of soluble salts. With no soluble salts a soil would be infertile. At times, however, a soil may contain an excess of soluble salts, and such excess is injurious to vegetation. A sure method of clearing a pathway from weeds is to apply a heavy sprinkling of common salt.

The soluble salts naturally present in soils may be of different kinds. A mixture is always present. This includes chlorides, sulphates, nitrates, and sometimes carbonates of potash, soda, magnesia, and lime. The proportions in which the various constituents are present depends chiefly upon the chemical character of the soil minerals and the physical condition of the subsoil.

Origin of Soluble Salts.

The soluble salts present in soils have two sources of origin. One of these is the soil itself. The insoluble mineral matters, also the humus bodies in the soil, slowly undergo chemical change as a result of "weathering" agencies. Some of those changes yield soluble products. Soluble salts are also directly added to the soil in rain water. Thus, at Rothamsted (England), 24 lbs. of common salt and 31 lbs. of sulphate of soda were obtained annually per acre through rain; at Canterbury (N.Z.) the corresponding figures were 98 and 26. Observations at other places* show that rain always supplies soluble salts, and at maritime stations the amounts quoted may be largely exceeded.

Where the Salts Accumulate.

From the soil itself, therefore, and from the rain the soluble salts receive constant additions. Whether in any particular soil the actual amount will increase depends upon whether or not the annual gains exceed the annual losses. With good drainage and sufficient rainfall, any excess of soluble salts is soon washed away. In districts with a small rainfall or bad natural drainage all the soluble salts added tend to accumulate. Generally speaking, excess of soluble salts is an evil which is confined to arid and semi-arid districts.

In a humid region the best soils produce soluble salts freely, including those required for plant growth. That is why they are good, and any excess of salts is washed away in drainage. In dry districts the best soils also produce soluble salts freely, but here the excess may not get washed away. As a result we find that excess of salts is not only characteristic of arid districts, but also that where it occurs in arid districts it occurs most commonly on the better classes of land.

What is Alkali?

A soil may become infertile owing to an undue accumulation of soluble salts. Such excess of salts represents an old trouble in

* Jour. Agri. Sci. Vol. 1. Pt. 3

America, India, Egypt, and the dry countries of the world. When present in amount sufficient to injure vegetation, the soluble salts are generally referred to as soil "alkali." The word is here used in an agricultural and not in the chemical sense.

There are two kinds of "alkali"—black and white. Black alkali is chiefly the carbonate of soda (washing soda). White alkali includes all the other salts, but sodium chloride (common salt) and sodium sulphate (Glauber's salt) usually predominate. The white alkali may also include soluble salts of magnesia and lime.

Black Alkali.

Of the two kinds of alkali, black alkali is the worst as regards its effect on plants, but when present in moderate quantity is capable of remedy by simpler means than in the case of white alkali. Being carbonate of soda, black alkali has a strongly corrosive action on the tender rootlets of plants and destroys these. It may also hinder and stop nitrification by making the soil too alkaline. It also has a bad

FIG 1.—WHEAT GROWING 3 FEET HIGH AFTER TREATING BLACK ALKALI WITH GYPSUM.

effect on the physical condition of the soil by causing clay to become pasty and run together. Washing soda colours the moist humus matters of the soil black, and hence the name "black" alkali.

Use of Gypsum.

The evils of black alkali may often be removed by applying gypsum. Gypsum is sulphate of lime. With carbonate of soda the sulphate of lime reacts, giving, by double decomposition, sulphate of soda and carbonate of lime. The latter is insoluble, and of benefit to land. The sulphate of soda is much less harmful than the carbonate of soda, because it is a neutral salt and has no corrosive effect on the crop roots. According to Hilgard and Loughridge,* barley can resist about five

* Univ. of Cal. Agri. Exp. Stn. Bull. 133.

times more of the sulphate than of the carbonate of soda in the soil. Fig. 1, by the same authors, shows how in California gypsum enabled a " barren black alkali spot " to grow wheat successfully.

To decompose 0.10 per cent. of sodium carbonate in the top foot of a soil about 2.8 tons of gypsum is required per acre, but Loughridge found that twice the chemical equivalent was necessary to get satisfactory work. Besides decomposing the black alkali, gypsum renders soils more pervious to water soakage and facilitates the natural drainage. In bad cases of black alkali artificial drainage is necessary in addition to the use of gypsum.

White Alkali.

White alkali may also entirely destroy vegetation. Here the chloride and sulphate of soda have no corrosive action, but they hinder the crop in absorbing moisture from the soil. They further exert a pathological action upon the plants, as seen in the blackening and curling of the leaves in fruit trees. Excess of white alkali also

FIG. 2.—EVERYTHING KILLED OFF BUT THE SALT-BUSH.

hinders nitrification,* but it has not the injurious binding effect of black alkali upon clay soils. It leaves them powdery and friable. According to the authorities quoted above, the chloride of sodium is about twice as injurious as the sulphate when both are present in excess.

Gypsum is of no effect in removing the effects of white alkali, even when common salt is the chief constituent, and, indeed, on white alkali, the use of gypsum does harm by adding to the excess of soluble salts already present. Gypsum itself dissolves, if slowly, and nothing can be applied which will render white alkali harmless when the salts are present in amounts exceeding the tolerance of crops.

Salt-bush and Alkali.

A danger signal as to the probable occurrence of white alkali in a soil is frequently held out by the native vegetation. The various salt bushes (*Atriplex*) indigenous to Australia indeed thrive well on alkali soils even when the ordinary herbage is destroyed. Fig. 2

* Jour. Dep. Agri. Vic., July 1912.

represents a typical growth on a bad piece of unreclaimed alkali land in Victoria.

Dangerous Amounts of Alkali.

Exactly how much alkali will render a soil infertile has been the subject of considerable research. For black alkali, the United States Bureau of Soils* has adopted Hilgard's value of 0.1 per cent. as being the maximum that crops will stand. For white alkali, greater amounts are tolerated, and Means and Gardner† state "that in the soils of the Rosswell area, lucerne was just able to grow when the amount of salts was 0.4 to 0.5 per cent., and that 0.5 per cent. is taken as the maximum limit." Others set a different limit, due to the different conditions under which their researches were carried out. The following figures show the percentage of soluble salts found at different places in Victoria on spots where the crop was destroyed by alkali, and also for each crop from adjacent spots on the same field where the crop was doing well. The alkali was of the white variety in each case, being chlorides and sulphates. The percentages refer to the top foot of soil—

Alkali Soils in Victoria.

(*a*) CURRANT VINES.

	Vines doing Well.	Vines Killed.
Percentage of soluble salts	·018	2·061

(*b*) AMBER CANE.

	Crop Good.	Crop Killed.
Percentage of soluble salts	·036	2·108

(*c*) MAIZE.

	Crop Good.	Crop Killed.
Percentage of soluble salts	·028	1·993

(*d*) AMBER CANE.

	Crop partly Blighted.	Crop Killed.
Percentage of soluble salts	·186	·238

Circumstances Influencing Alkali Damage.

The fact seems to be that no definite standard can be laid down as to when a soil has too much alkali to grow a crop. It is safe, however, to accept the following generalizations:—

(*a*) *The Kind of Alkali.*—Sodium carbonate is more injurious than the chloride, and the chloride than the sulphate.

(*b*) *Its Vertical Distribution.*—The salts are most harmful when present in the upper layers of soil.‡

(*c*) *The Nature of the Soil.*—The same amount of alkali is more injurious in clay than in loamy soils, in which the roots can penetrate more freely.

(*d*) *The Kind of Crop.*—Most fruit trees suffer severely, but the fig, olive, and pear, in the order named, are very resistant to all kinds of alkali. Figs will often be seen healthy where other fruit trees have died out. According to Mackie§ grape vines are very sensitive, but some American resistant stocks show marked tolerance. He states

* U.S.D.A. Bureau of Soils. Rep. No. 64. † Univ. of Cal. Agri. Exp. Sta. Bul. 133.
‡ Loughridge, *loc. cit.* § U.S.D.A. Bureau of Soils Bul. 42

that "where alkali kills out spots in a vineyard, lucerne is usually planted, and where soils are too heavily charged with alkali to grow good lucerne, wheat and barley are grown. Barley is the most resistant of the cereals except, perhaps, rice. When the alkali is too strong for barley it is planted to Bermuda grass . . . its feeding roots have been found 9 feet deep, thus making it also drought-resistant. It should never be planted except in hopelessly ruined soils." Mangels and sugar beet are fairly resistant.

(c) *The Age of the Crop.*—Crops generally are much more susceptible when young, but when older, and the roots have penetrated more deeply, they are much more tolerant. American investigations with lucerne show that an established crop exceeds in tolerance a young crop of lucerne "to an extent almost beyond belief."

The Effect of Water.

As the various factors mentioned have each a bearing upon the question of whether a soil contains too much alkali to grow a crop, it

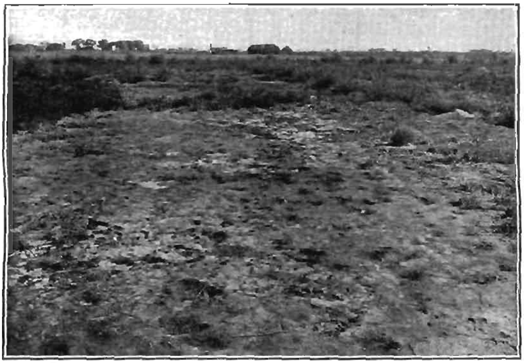


FIG. 5.—LUCERNE ATTACKED BY WHITE ALKALI (VICTORIA).

is obviously impossible to state any definite limit as to the amount of alkali which will cause infertility. What is an injurious amount of alkali varies according to circumstances. There is another important factor. Consideration of the manner in which alkali affects a crop indicates that it is less the percentage of alkali in the soil than the percentage in the soil water that is important. This view is strengthened when we reflect that in soils of moderate alkali content the injurious effect of the salt may be temporarily removed by a good fall of rain or by irrigation, as thereby the concentration of the salt in the soil water is diminished; by a good supply of water it may easily be diminished by one-half.

A crop on alkali land may show the effects of drought, and yet on turning the soil up it may seem wet enough. Some good examples of

this were observed during a recent visit to Mildura. The reason is that while crops require moisture on any soil, they require more than usual if the soil contains much alkali. There is, however, an early limit to the extent to which water, as in irrigation, can be used to mitigate the evil effects of alkali salts. It may be necessary to keep the soil so moist with this object that the excess of water leads to other evils. These are the evils which are characteristic of land that is swampy and sour, and which are well enough understood.

Movement of Alkali in Soils.

The laws which govern the movement of alkali within the soil are important, because it is upon a knowledge of these that rational methods of combating the evil must be based.

Height of the Water Table.

A common term in connexion with soil drainage is the "water table." This is the level to which at any time water would rise in a hole left open at the place. In some soils the water table, or ground water, would be located—if at all—only at great depths. In other cases, including on cultivated land, it would often be found, and especially in winter, within a few feet, or even inches, of the surface; and, indeed, the surface of the ground might be wholly submerged. Generally speaking, heavy rains and irrigation raise the water table in soils. The height of the water table is also subject to the influence of underground drifts, and it may rise very unequally at different parts in the same field. When within a few feet of the surface, water rises freely by capillarity from the water table to the surface, where it is dissipated by evaporation.

Ascent by Capillarity.

When sea water is evaporated down in a kettle the salts in it are left behind. When the water rising from the water table by capillarity is salty, evaporation at the surface causes the salts to be left there. The amount of water so evaporated will be greater the nearer the water table is to the surface. It will also be greater if the surface is caked, as is well known to farmers who work their fallows to diminish evaporation. The amount of water evaporated from the actual ground surface will also be greater on land not growing a crop. In alkali soils, therefore, a high water table and a baked surface free from vegetation are conditions which favour the carriage of salt to the surface. In bad cases the salt appears as a white incrustation.

Incrustations of Salt.

White incrustations of salt may also appear on the surface during the summer months on soils where the water table is low. This will only occur in arid districts. The effect of winter rains is to wash the salts down a few feet, and then as the soil dries out from the top again the salts re-ascend to the surface. In such cases the incrustations will usually be more uniformly distributed and show less disposition to aggregate in spots than in localities where, owing to irrigation, a well-defined water table has been formed.

Seasonal Movements.

Whether in alkali soils the greatest amount of alkali will be found in the top foot or at greater depths depends upon the season of the year, as this affects rainfall and evaporation. As a rule the alkali will move upwards in summer and downwards in winter, and the alkali content of the surface foot will be least in the early spring.

It has been previously observed that alkali is most injurious to crops when present near the surface of the ground. In combating the trouble, therefore, effort must be directed towards getting the salts down from the surface, and then keeping them down.

REMEDIAL MEASURES.

For practical purposes it can be said that the means to be adopted towards this end will depend upon the height of the water table.

Land with Good Drainage.

First.—When the Water Table is Low.—The means to be adopted will largely suggest themselves from what has already been said. On

FIG. 4.—EFFECT OF ALKALI ON VINES, MILDURA.

unirrigated land, spring offers the best opportunity for seeding a young crop—following upon the downward leaching of winter rains. If the land can be irrigated, a good flooding will carry most of the salts downward, and thus give the young crop a proper chance to start. In either case, subsequent cultivation or intertillage is of great use in hindering a rapid re-ascent of the salt. Again, previous to seeding, deep ploughing will often be useful on good land in burying the salt, while at the same time it forms a soil mulch which impedes the rise of salt to the surface. In all cases on undrained land care must be exercised in order to avoid use of too much irrigation water, as thereby the

water table may be raised within the danger limit. Orchardists of experience and repute working on alkali soils at Mildura and Cohuna ascribe their success to a limited use of irrigation water, coupled with constant cultivation between the rows of trees. Where their methods fail in practice, as occasionally happens, it is on ground where the soil is deficient in natural drainage.

Benefit of a Growing Crop.

On land which is near the border line between success and failure owing to alkali, it is well worth while to devote extra care in order to get a crop once established. It has been noted that, *e.g.*, young lucerne was much less resistant than old lucerne. The reason is, doubtless, in part due to the greater toughness in the epidermis of older roots, and also to the greater depth to which the old roots penetrate, but it is also due in large measure to the water requirements of the growing crop. The roots absorb water throughout the whole body of soil to a depth of several feet, and in so doing they check at the points of absorption the ascent of alkali salts which in uncropped soil would eventually reach the surface. The crop foliage also limits evaporation by shading the surface. In these ways a growing crop tends to keep the alkali down, while the absence of crop increases the difficulty of cropping, and aggravates the evil.

Effect of Manures.

Ordinary artificial manures have no effect in destroying alkali, and, indeed, those of them which are water soluble have a prejudicial effect physically. They may, however, by giving stronger plants render them physiologically better able to withstand excess of alkali, and as Professor Watt, of Sydney,* recently demonstrated, the use of phosphates will specially cause the roots of crops to go deeper in the soil. This extra depth of roots is an advantage, as the most harmful effect of alkali is exerted near the surface. Among manures, the one most likely to materially aid the crop is a good dressing of stable manure incorporated with the surface soil. By loosening the soil this will impede the rise of salt, and by its well known power of increasing the water-holding power of soils the concentration of the salt solution in the surface layers will be correspondingly diminished. Attention has been drawn† to the beneficial action of stable manure on small holdings in Salt Lake Valley.

Land with Bad Drainage.

Second.—Where the Water Table is High.—Where the ground water comes too near the surface in alkali soils ordinary cultivation methods and precautions are surrounded by difficulty, and may be fruitless of result. If the salt cannot be kept down sufficiently by cultivation and cropping, the only alternative left is to get rid of it altogether. For this purpose under-drainage is necessary. Fig. 5 shows a 12-acre paddock at Cohuna where a crop of oats failed owing to alkali, and which the owner now proposes to drain. The land has not been cultivated since the crop died off.

* Paper read at Science Congress, Melbourne, 1913.
† U.S.D.A. Bureau of Soils Bul. No. 43.

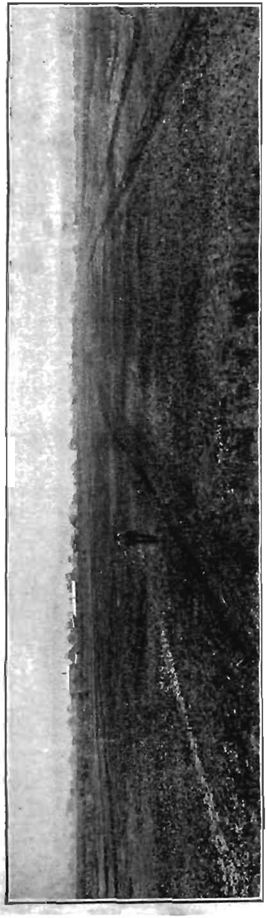


FIG. 5.—AN ALKALI PADDOCK REQUIRING DRAINAGE.

When is Draining Necessary?

Exactly at what height of the water table it becomes necessary to under-drain depends chiefly upon the physical character of the soil, as this affects capillarity. Dorsey* says that in porous soils with moderate alkali content anything less than 4 feet indicates the need of draining, while in lands heavily charged with alkali Loughridge† indicates ground water at 5 or 6 feet as coming within the danger zone. In these cases drainage is recommended as the only sure cure for alkali. Drainage, coupled with irrigation, furnishes a rapid means of leaching away the salts.

Drainage at Mildura.

At Mildura, under-drainage has been resorted to in the worst cases of alkali, and much valuable land now under vines and fruit has been reclaimed by this means. The methods pursued by Mr. Kelly are practically those followed in the district, and may be quoted. He sets the drains 4 feet deep and from 30 to 120 feet apart, according to the character and lie of the land, which is undulating. He uses 3-inch tiles for the leaders, and larger size for the mains, which deliver into a sump lined with wood, and measuring 5 feet by 2 feet. The sump method of draining is extensively practised at Mildura, and porous drift which carries off the drainage waters is usually struck at about 40 feet. Mr. Levien is at present draining a considerable area on the sump method, which answers the purpose well.

Drainage at Sparrovale.

Another example of the good effects of drainage in removing

* U.S.D.A. Bureau of Soils, Bul. No. 43.
† Univ. Cal. Exp. Sta. Bul. No. 83.

salt is seen at the farm of the Geelong Harbor Trust at Sparrovale, Geelong. Here several hundred acres of land which were too highly charged with salt five years ago to permit of successful cropping have been reclaimed by drainage and subsequent irrigation. The cure is not yet complete, but has sufficiently advanced to allow a magnificent stand of lucerne to establish itself on part of the area. The drains run 4 feet deep, are placed at a distance of 5 chains apart, and empty into large open channels, which are discharged by a windmill pump. The wide distance between the drains is permissible in this instance, because of the existence of a bed of shell in the subsoil, which allows of an extensive range of percolation.

American Experience.

Drainage, as already mentioned, is now extensively practised in America, in conjunction with irrigation, for the removal of alkali. Regarding the method of drainage, Dorsey* states:—"A drainage system to reclaim alkali land differs somewhat from the drainage systems commonly used in regions of abundant rainfall. To secure the best results, the drains are placed at a greater depth, and correspondingly wider apart. Drains should be at least 3 feet deep, and depths of 4 feet, and even 5 feet, will repay the extra cost." Widths recommended vary from 150 feet on heavy clay up to 300 feet on light sandy loams. "Tiles smaller than 4 inches have not given satisfaction on alkali lands owing to the difficulty in keeping them free from silt."

FIG. 6.—WINDMILL AND END OF OPEN MAIN DRAIN AT SPARROVALE.

Open Drains.

Open ditches are as effective as closed drains, and have been extensively used in Egypt† and other alkali districts in Northern Africa. They need frequent cleaning, occupy valuable space, and require bridging. On this account they are inconvenient as small field drains, but are well suited for large mains that receive the surplus waters of small drainage systems.

* *Loc. cit.*

† Reclamation of Alkali Lands in Egypt. Bul. 21. Bureau of Soils.

Problem of Securing an Outlet.

In many cases the benefit of draining alkali lands is appreciated, but the practical difficulty is to obtain an outlet for the drainage waters. At Mildura, as was observed, an outlet is obtained on a farm by simply sinking a shaft to the porous underground drift. At Sparrovale the drainage is accomplished by pumping to a level at which the waters can flow away. At Murray Bridge, in South Australia, a similar pumping system is in vogue. Cases, however, may arise which are beyond the reach of individual effort. In America provision has been made to stimulate co-operation in several of the States by giving legislative authority to form drainage districts within which the necessary taxes may be levied. Such a system is now in operation in Illinois, and Hilgard,* an eminent authority on this subject, predicts that "Bitter experience will, doubtless, in time compel unanimity on this subject in California" (his own State). It is possible that in course of time the need for action based on either public or co-operative policy will force itself on public attention in Victoria.

Irrigation Water in Victoria.

It is sometimes said that irrigation brings alkali. So far as the irrigation waters in Victoria are concerned this is not the case, as these waters are particularly free from soluble salts. The latest considerable appearance of salt in Victoria is at Cohuna, but the irrigation water there is of a high class. The following analysis by the Chemist for Agriculture shows the composition of a sample of the channel water as supplied to the settlement:—

Composition of Irrigation Water.

	Parts per 100,000.
Carbonate of calcium	4.45
Sulphate of magnesium	1.12
Chloride of calcium	1.30
Chloride of magnesium	trace
Chloride of sodium	2.78
Total soluble salts	9.65

What happens is not that the water here adds salt in any important degree, but, as results in all irrigation, it tends to draw salt up in the soil and concentrate it in spots. Methods of counteracting this have been described.

Summary.

To sum the matter up, therefore, "alkali" means excess of soluble salts. These may limit, or even destroy fertility. The appearance of alkali is a world-wide phenomenon in arid or semi-arid districts. Irrigation does not form alkali, but concentrates it at the surface, where its action is most felt. The method of combating depends chiefly upon whether the water table is more or less than about 4 feet

* Soils, by E. W. Hilgard, Ph.D., LL.D. MacMillan, 1910.

deep. In the former case the evil may be surmounted by careful *methods of cultivation. In other cases drainage appears an essential* step. To obtain an outlet for such drainage, individual effort may suffice. In other cases co-operation is required. In several American States such co-operation is encouraged by legalizing the formation of drainage districts. The question of whether in particular cases further aid should be given raises matters of general policy with which this paper is not intended to deal.

VICTORIAN PRODUCTS FOR EXHIBITION IN AMERICA.

The Department of Agriculture has forwarded to Mr. F. T. A. Fricke, the Victorian Agent in San Francisco, a collection of Victorian products for exhibition there. and showing to would-be settlers from America the quality of products grown in the State. The collection, illustrated above, consists of 100 varieties of small sheaves of cereals, 50 bottles of wheat, oats, barley, peas, maize, &c., a couple of fleeces, sheaves of flax, and a bundle of flax fibre, samples of tobacco leaf, 4 doz. jars of assorted preserved fruits, and 10 boxes of dried fruits. The whole was prepared in such a manner as to make an attractive and educational display of the various products mentioned. and should be of much interest to those who think of making their homes in Victoria.

BEE-KEEPING IN VICTORIA.

(*Continued from page* 247.)

By F. R. Beuhne, Bee Expert.

XIV.—COMB-HONEY.

In Victoria, and in Australia generally, the amount of honey marketed in the comb is only a small fraction of the total production. In England, the United States, and Canada, a considerable portion, perhaps nearly one-half, of the honey used for table purposes is in the comb.

In North America, the production of comb-honey in 1 lb. sections has attained to large dimensions, and many large apiaries are run exclusively for the raising of high grade section-honey, high prices being obtainable for what is graded as "fancy." In the profitable production of comb-honey, considerable skill, and favorable conditions of climate and flora, are essential.

That a larger amount of honey in the comb is not consumed in Australia is often attributed to lack of enterprise of the apiarists, or to the absence of consumers willing to pay the extra price for honey in the comb, as compared with extracted.

Well filled sections of comb-honey with perfectly clean white cappings can only be obtained in localities which have a heavy honey flow lasting sufficiently long to insure uninterrupted work in the sections from start to finish. The profitable production of comb-honey is only possible under a combination of favorable conditions not present in every locality, and not every season. Comb-honey may, as a matter of fact, be produced whenever bees store more than is needed for their own immediate requirements, but very few bee-keepers are aware at what cost, through loss in yield, this is done when attempted under unfavorable conditions. There are seasons when bees will produce a fair amount of honey when given ready-built combs for extracted honey, but if compelled to work in sections, a very small yield of inferior comb-honey will result.

The true causes of the small production are, however, the climatic conditions of our country and the vagaries of blossoming and nectar secretion of our native flora. The yields of honey are equal to those obtained in any part of the world, when taken on an average for several years, but our high average is made up of a glut one season and a comparative dearth in the following. We have "on" and "off" years; and, while it is comparatively easy to produce good sections in the "on" year, it would be quite unprofitable to attempt it in the "off" year.

In the case of extracted honey, much of it is held over from one season to another without any deterioration in quality. Comb-honey, however, cannot be kept in perfect condition for any length of time, except with a considerable amount of trouble in providing dry warm storage. Thus, 1 lb. sections may be rather plentiful one season and almost unobtainable the following, and the prices proportionately high. Under these conditions, neither production nor consumption can be expected to increase.

Some ten to fifteen years ago, several apiarists produced comb-honey on a large scale, but abandoned its production for that of extracted honey. Much of the section honey which finds its way on to the market now is produced by bee-keepers in a small way; and in appearance leaves much room for improvement.

As already stated, skill is required to produce comb-honey profitably. The conditions necessary to make comb-honey production profitable are—1. A sufficient amount of the right kind of honey-producing flora within reach of the bees. 2. Atmospheric conditions favorable to the secretion of nectar and the flight of bees. 3. Strong colonies in which the maximum number of the workers are field bees. The factors 1 and 2 depend upon the locality, while the third is one depending upon the skill and energy of the bee-keeper; this should from the very commencement of the season be directed towards securing the greatest possible number of field bees in each hive at the beginning of the main honey flow, and to maintain the strength of the colonies while the honey flow lasts. Under Australian conditions, such as the irregular blooming of some of the honey-producing trees and the periodical scarcity of pollen, it is in some localities practically impossible to bring colonies to that condition which is necessary to the profitable production of first-class 1 lb. sections of comb-honey. In districts where the main honey flow begins shortly after the blooming of that valuable pollen plant, Cape Weed, there is little difficulty in having colonies in the right condition for comb-honey, provided that they had wintered well, and that each colony has a vigorous queen. Cape Weed is now so widely distributed over Victoria that there are few localities where it is not plentiful on any open spaces, for it does not thrive in close forest or scrub country, and is, therefore, absent in the vicinity of some of the best apiary sites in the State. In such localities the hives are often not in a condition to produce comb-honey at a profit, and the colonies had better be kept in a locality with a plentiful early pollen supply and shifted on to the honey site when the flow begins.

There are many other localities where Cape Weed and other pollen producers are plentiful, but too long an interval occurs before the honey flow commences, and the bees are then often in a backward condition, more so when, as is usually the case in such districts, there has been much swarming. Swarming is a factor that has to be reckoned with in the production of comb-honey. It is a well known fact that when extracted honey is produced there is much less swarming and no difficulty in keeping the colonies strong, particularly when the queen is given free access to the upper story or stories up to the time of the first extracting, or where the honey flow is very heavy throughout the season. When sections are placed on the hives, instead of extracting combs, the bees will be much slower going up into the super, and will become so crowded in the brood chamber that swarming results. Thus the worker-force is divided, neither the swarm nor the parent colony is in a condition to store surplus honey for two to four weeks, or longer, if the stock was only of medium strength before it swarmed.

Often before either of the two colonies is ready for storing in sections the best of the honey flow is over, and what usually occurs, particularly in the districts near Melbourne, is that the number of

colonies is doubled, a few highly coloured and stained sections are produced, a number of swarms abscond, and some of the later casts die of starvation before spring.

To deal successfully with the swarming problem in connexion with comb-honey it should, first of all, be understood that destroying the queen cells which are raised by a colony preparing to swarm does not prevent swarming, it only delays it, except when conditions unfavorable to the bees, such as bad weather or a stoppage of the honey flow, follow immediately after the destruction of the queen cells.

Although the production of comb-honey in 1-lb. sections encourages the swarming impulse, yet there will usually be found in an apiary of any size a few colonies which, while equal to the best in population and yield of honey, go through one or two entire seasons without swarming. Such stocks give a maximum return for a minimum of labour and attention, and their number should be increased by rearing the young queens required from the queens of these non-swarmers.

To obtain the best results, the manipulation of the colonies should come under two different headings: 1. Preventive measures. 2. Control of the swarming impulse.

1. Preventive measures should commence long before there are indications of swarming. The brood chamber should never be allowed to become too crowded with bees, nor should it have any great quantity of honey in combs not occupied by brood; further, the less honey there is between the brood and the top bars of the frames, the sooner will the bees work in sections when the latter are put on. There are different ways of getting a colony into the right condition for work in sections, such as uncapping combs of sealed honey and inserting them, one at a time, between the brood at intervals of four or five days, or doing the same with extracted combs if honey is plentiful in the hive or coming in freely. Operations such as these, however, require an amount of time and labour which few Australian bee-keepers are prepared to give, neither is the artificial stimulation thus produced always an advantage. We cannot predict to a week or so when a particular honey flow will start, and it is therefore better to let the development of the colonies proceed on natural lines. The simplest way of getting a colony in the right condition will be found to be to allow an expansion of the brood nest upwards into a set of drawn combs, and then at the right time for putting the sections on, to put the combs containing the most brood, especially the sealed, into the lower body, shaking the bees off the surplus combs in with the others and using the combs to help on weaker stocks. When a two-story colony has thus been reduced to one set of brood combs and one or two section supers, the bees are forced to enter the sections at once. A few bait sections, that is, unfinished previous season's sections, put amongst the empty ones will be a great inducement for the bees to commence work at once. During hot weather the preventive measures should include enlarging the hive entrances and shading the hives during the hottest part of the day.

2. Controlling the swarming impulse. Even after everything possible has been done in the way of prevention, there will still be swarms, few or many, according to the strain or race of bees kept and the character of the locality. The swarming impulse may be controlled in two ways—by anticipating it, or by allowing natural swarming

to take place and reuniting some time after. The principle which underlies all methods for the control of the swarming impulse is an interruption in the hatching of young bees; this is what takes place in natural swarming. From the time a swarm commences work in the new hive at least 21 days elapse before young bees again emerge, by this time the swarm will have lost many of its former numbers, and is therefore not in a condition to give the best results. When swarming is anticipated, this interruption in the generations of hatching bees is brought about by the removal of the combs containing brood and the substitution of empty drawn combs or frames of foundation. This is usually done when a colony starts raising queen cells. If the colony, although preparing to swarm, is then not yet strong enough, the cell cups may be destroyed and the brood removed a week or a fortnight later. Under certain conditions of season, colonies deprived of all brood may be inclined to swarm out. This may be prevented by taking away half the brood combs, and when, five or six days later, young brood is found in the combs which were substituted for the brood, the remaining combs of adult brood may then be removed. The brood thus removed in anticipating swarming, may be given to backward colonies after shaking most of the bees off. Before any combs are taken from a hive, the whereabouts of the queen should be ascertained lest she may be injured in the shaking of the bees. Too many combs of brood should not be given to any very weak stocks, or much of it will be wasted on account of the inability of a small colony to take care of it.

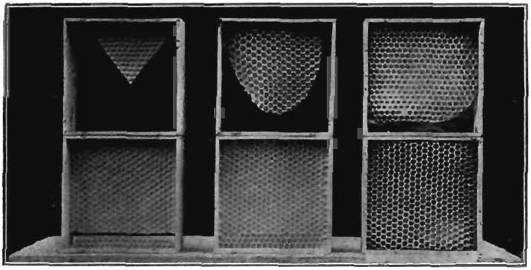
This above method of swarm control involves a considerable amount of work and attention, and most bee-keepers find it more convenient to allow natural swarming to take place and, after a time, to reunite the swarm and the parent stock, thus getting the same force to work in one hive as if the colony had not swarmed at all. When the swarm issues it is hived on the same stand, while the parent stock is placed alongside, but with the entrance facing at right angles from the old position. Nearly all the flying bees which remained when the swarm came out will return to the accustomed place, and thus join the swarm, weakening the parent stock sufficiently to prevent after-swarms. If the bees are of a desirable strain, one of the queen cells in the swarmed stock may be allowed to hatch. This should be the most perfect and forward one, the others are destroyed. If the colony is not one of the best, cells raised from one of the best non-swarming stocks may be given. In from fourteen to twenty days, according to the maturity of the cell on day of swarming, the young queen should be laying. Twenty-one days after swarming all the worker brood will have hatched out, and the bees may be united with the swarm after removing the queen of the latter (the old queen) and the combs of the parent stock, if section honey is to be raised. (The method of uniting is described under Swarming, Chapter IX.) The colony is now in the best condition, with a young queen and new combs in the brood chamber. These are very desirable when clean, white sections are to be raised. From a colony manipulated in this way the writer, some years ago, obtained 312 beautifully finished 1-lb. sections in what is by no means a first-class locality.

Much of the faulty appearance of sections seen in shop windows, as well as most of the damage comb-honey suffers in transit on the

railways is due to false economy on the part of the producer, who provides the section boxes with only a small starter of foundation, as shown in the first section of the top row in the illustration. This section stands on one supplied with a full sheet of the thinnest foundation (12 to 13 square feet to the lb.) and a bottom starter.

The progress of the work of the bees may be seen in the second and third pair of boxes. The third one of the top row, although almost ready for sealing by the bees, is not fastened to the bottom of the section; while, in the lower tier, the comb is already fastened to the *wood all round in No. 2 and completely fills the box in No. 3.*

Apart from the quality of the produce, which would be the same in either case, there are two things to be considered in section honey, viz., appearance and weight. A section built from a starter will be partly sealed before comb-building is finished, and the cappings will often lose their virgin whiteness before the sections are ready for removal from the hive. Drone comb is also usually resorted to by the bees; and the finished section has not an even surface, nor is it fastened to the wood



1-LB. SECTIONS OF COMB-HONEY.
Upper tier from starters, lower tier, full sheets.

all round, and whatever spaces are left open increase the liability to break down in transit and to deduct from the weight.

When a section is built from a full sheet of the thinnest foundation and bottom starter the bees first of all join sheet and starter, as in No. 2 *of the bottom tier. They then raise the comb simultaneously over the* whole face and seal or cap it all over at one time, so that, when ready for removal, the capping is snow-white, the section full weight (15 to 16 oz.), and being a solid block of comb completely filling the box will not break down and leak in transit.

It is, however, important that only thin surplus foundation should be used, as stout foundation is objectionable when eating the comb. It should not be less than 12 square feet to the 1 lb. This grade costs 2s. 8d. per 1 lb., which will cut 100 full sheets and bottom starters, or 400 top starters as shown in first section of the top tier. The cost per dozen for foundation would thus be 4d. for full sheets and 1d. for top starters; but as well-filled snow-white sections, such as can only be obtained from full sheets, are worth from 1s. to 2s. per dozen more, there

is an actual gain of 1s. to 1s. 9d. per dozen in using full sheets and bottom starters.

There is yet another advantage in the use of full sheets; that is, brood and pollen are not so likely to find their way into the section boxes. When the brood-chamber consists, as it should do, of worker-comb, bees will often build drone comb and raise drones in the section boxes, when given the opportunity afforded by the use of small starters.

What has been said here should not be understood to mean that first-class sections cannot be obtained from small starters. Under the favorable conditions of a good honey flow and strength of colonies, first-class sections, fastened to the wood all round, may be produced without the use of full sheets and bottom starters in the sections, but what is saved in labour and cost of extra foundation is lost many times over in the smaller number of sections.

(*To be continued.*)

BITTER PIT IN APPLES—

This disease, which for many years has been the cause of heavy losses to orchardists, has become particularly menacing with the growth of the export trade. Its appearances are well known, but its origin is obscure. The matter seemed to call for joint action, and in 1911 the Federal Government, in conjunction with the States, resolved to conduct an inquiry. The matter was intrusted to Mr. D. McAlpine, who as Vegetable Pathologist in Victoria for many years had earned a notable reputation in the treatment of plant diseases, and in his first *Progress Report* he gives the results of his preliminary work. It is shown that neither insects nor fungi, bacteria nor external agencies, such as spraying, are concerned in the production of bitter pit. The cause rather is internal, and must be sought for in a study of the structure and physiological processes of the apple itself. A record of the work done in this sphere forms a large part of the report. The principal contributing factors to the disease are—(1) changeable weather conditions at a critical period of growth, (2) amount and rapidity of transpiration by the apple, (3) sudden checking of transpiration at night, (4) failure of water supplies under the skin of the fruit, followed by irregular recovery, (5) inequality of growth, (6) fluctuations of temperature during storage, (7) nature of the variety. These factors are more or less susceptible of control by approved methods of cultivation, selection, and storage, and further work of a practical character is outlined for next season in determining the effect of soil, cultivation methods, manuring, irrigation, selection of stocks, and systems of pruning. The results of the next report will be awaited with interest. Incidentally it is noted that when apples are kept at a temperature of 30-32 degrees Fahr. the development of bitter pit is retarded.

FARM SANITATION.

By C. H. Wright, Instructor in Plumbing, Swinburne Technical College, Hawthorn.

(*Continued from page* 220.)

PART 2.—SEPTIC TANKS AND SEWERAGE CONNEXIONS.

Place all your sanitary fixtures on or near an external wall and *nearest to the drains. If on different floors, have them placed as much* as possible above one another.

DRAINS.

Only good salt-glazed pipes should be used for septic tank work.

Except in the case of very large establishments, the diameter of a drain need not be more than 4 inches. Drains needlessly large are not properly cleansed by the flush.

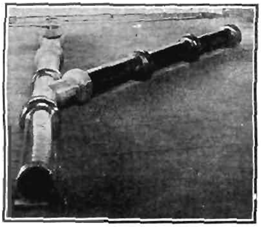


Fig. 12. Showing how a short branch drain should enter a main drain.

Fig. 13. Showing how a long branch drain running at right angles to the main drain should enter the main drain with an oblique junction and a bend.

Junctions are always used in connecting branches to main drains. It is important to remember that tributary drains join main drains *obliquely, as shown in* Figs. 12, 13, so that the sewage enters in the direction of the flow, otherwise splashing will occur, and this is likely to lead to a gradual deposit of dry sewage *above the water line.*

Bends in drains should be avoided as far as possible. When unavoidable, the curve should be an easy one. Bends are made 12, 18, and 24 inches long, and in angles of 15, 30, 45, 60, and 90 degrees.

Fig. 14 shows 4-inch bends of different degrees.

Fig. 15 shows an inspection opening, commonly termed an I.O., in position. It is used as a means of cleansing a drain in case of a *stoppage.* The opening is closed by a disc that can readily be removed.

Fig. 16 shows a gully trap and basin. It should be fixed *within* easy reach of the back door. No drainage system is complete without one, for its use is to receive liquids too objectionable to pour down the waste pipe of an inside fixture.

Fig. 17 shows a disconnected trap and adjustable tops and level inlets, used to receive waste pipes.

In every case the waste pipe must enter at other than the opening directly over the trap; this is so that an obstruction can be cleared without displacing any fitting.

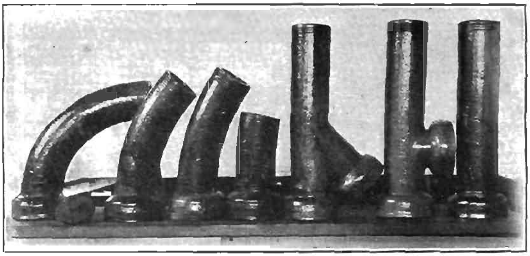
These drain traps are designed for the interception of gases only, and are of a self-cleansing form.

Joints.—There are a great many patent joints used for jointing stoneware pipes, but the popular joint of Melbourne and suburbs is a joint made with gasket and cement.

Fig. 18 shows a section of such a joint.

Hemp spun yarn is first rammed into the joint, and it is then filled with a stiff composition of cement and sand. Great care must be taken to prevent any of the hemp from entering the bore of the pipe, as it becomes saturated with cement, hardens and readily catches paper, &c.

Joints should be made with great care, and must receive keen attention all around to avoid the possibility of a leak.



A B C D E

Fig. 14. Stoneware pipes and fittings—
A.—24 inches x 90 degrees bend.
B.—45, 30, 15 degrees bends.
C.—Oblique junction.
D.—Inspection opening.
E.—Straight pipe.

Trees growing in close proximity to the line of drains should be cut down. If there is the slightest risk of tree roots invading the pipe trench, the pipes likely to be affected should be surrounded with 6 inches of concrete, composed of 1 portland cement, 2 clean sand, 5 stone of 1½-inch gauge.

The laying of sewer pipes under buildings cannot be too strongly condemned, but if absolutely necessary, cast-iron pipes with leaded joints should replace stoneware. In any case where stoneware piping is under a building it must be surrounded with 6 inches of concrete.

Concrete should be placed around and under gully basins, around the top of stoneware drains where they connect with vent pipes—this will prevent damage by rough usage.

It should also be placed under and around bends rising vertically and under the bases of all drainage traps. This helps to prevent the fracture of drains by settlement.

Fall.—Drains should have a fall of from 1 in 30 to 1 in 60. Those with two little fall have a sluggish flow of water, and are liable to silt up. Those with too much are liable to cause solids to be left stranded by the rush of water.

Stoneware drains should be laid with a depth of at least 2 feet from the surface to the centre line of the pipe. If the ground is soft and liable to heavy traffic, cast-iron pipes should be used.

All drains should be laid perfectly straight from point to point.

Any changes of direction should be made with curved pipes or oblique junctions. These junctions will provide openings that a rod may be passed through in case of a stoppage. (Fig. 19.)

On occasion of a drain pipe being carried through a wall, a space of about 3 inches should be left over the pipe to allow for any settlement in the building.

Fig. 15.—Showing a trench in good ground and an inspection opening in position.

Venting of Drains.—Although the foul gases arising in the septic tank should be prevented from entering the drain, so any gas generated in the drain pipes is prevented by the different traps from entering the air at inconvenient levels. Provision must be made for the escape of foul air at high levels by the aid of vent pipes. These vent pipes will enable a complete circulation of fresh air to pass through the whole system. There must be two openings—one an induct vent, and one an educt vent. Any branch drain over 15 feet must also be provided with a vent opening.

These vent openings are indicated on plan. (Fig. 20.)

The heights of drain vent pipes will be referred to later.

Excavating Trenches.

The trench need not be wider than is necessary to allow the pipe-

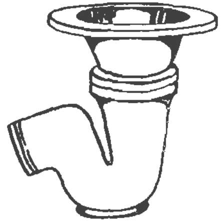


Fig. 16. A gully trap and basin.

must depend on circumstances. For testing purposes, it is better to extend the trench so that the whole job may be laid complete. This may have to be modified if the ground is of an unstable nature from recent rains or other causes. If the trench passes close to buildings or walls so as to endanger the foundations it is advisable to keep it open as short a time as possible; the trench would then have to be dug in short lengths.

When the trench exceeds a certain depth, and the nature of the soil will allow, or rock is met with, it may be found cheaper to drive a heading—but in this case very close supervision is necessary.

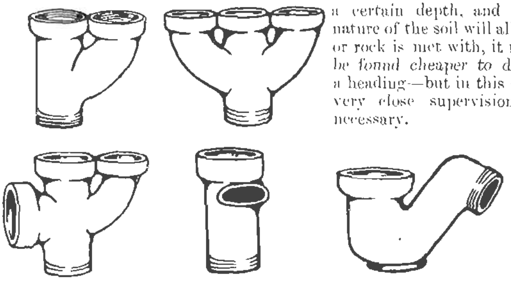


Fig. 17.—Disconnecting trap and adjustable tops to receive waste pipes.

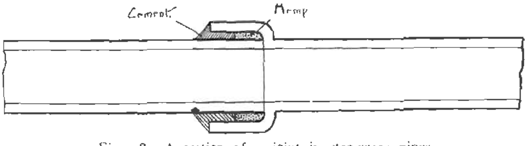


Fig. 18.—A section of a joint in stoneware pipes.

There are various methods of timbering a trench. For instance, in firm ground during rainy weather it may be necessary to timber as in Fig. 21.

In moderately firm ground, as in Fig. 22, and in sloppy wet soil, as in Fig. 23.

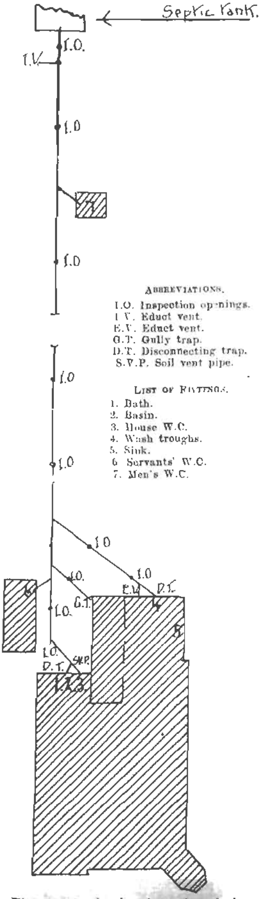


Fig. 20. A simple plan of a drain-pipe system.

Planning.—When the position of the septic tank, the water closets, and disconnecting traps have been decided upon, a simple plan, to scale, should be drawn. Such a plan will facilitate designing, guide the contractor and workmen, and enable a permanent record to be kept for future reference in case of alteration or repairs.

Drainage plans for city use are generally drawn on a 40-ft. to 1-in. scale, but 20-ft. to 1-in. will be found more convenient.

Start by planning first the main building, second the outbuildings, *and then the septic tank.* Make sure to have all buildings in their correct position and true to measurements. *Then the positions of the* disconnecting and gully traps, water closets, &c., should be shown, and, finally, *the vent pipes and inspection openings.* Such a plan is shown in Fig. 20.

Testing of Drains.—After drains are laid and jointed up they should be tested for leaks; this is done as follows:—All inspection openings are closed with testing discs, or else extended temporarily to surface level. The outlet end, rod eyes, and other horizontal openings must be closed by a testing disc, then the whole drainage system, if not too large, is filled with water to the surface level, the joints are then examined for leaks. Leaky joints are marked and made good when the water is run off. The inspection openings are sealed down and the earth filled in. Ramming must be avoided or displacement will follow.

The contracting sanitary engineer who understands his business will plan correctly, use the right kind of stoneware pipes and fittings,

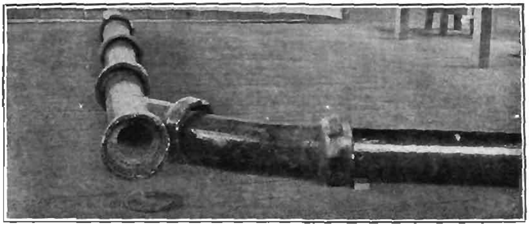


Fig. 19.—Showing how a change of direction may be made by aid of an oblique junction and a bend, making provision for cleaning purposes.

and set about his work in a straightforward manner. He will deal with good and bad ground and surmount difficulties that continually

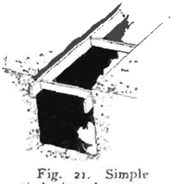


Fig. 21. Simple timbering where surface only is soft and likely to fall in trench.

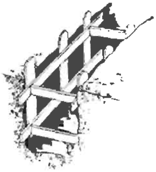


Fig. 22. Showing timbering in moderately firm ground.

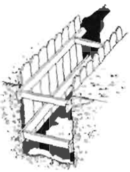
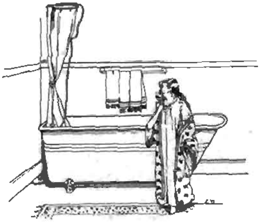


Fig. 23. Method of timbering in wet soil.

arise in drainage work in a manner that puts to shame the worried efforts of the inexperienced.

(*To be continued.*)



THE FRUIT TRADE OF VICTORIA.

ITS PRESENT STATUS FROM A COMMERCIAL STANDPOINT.

(*Continued from page 211.*)

PART VII.—PRE-COOLING AND TRANSPORTATION PROBLEMS—*continued*.

By E. Meeking, Senior Fruit Inspector.

Although further quotation of the results attained in America in connexion with experiments regarding the utility or otherwise of

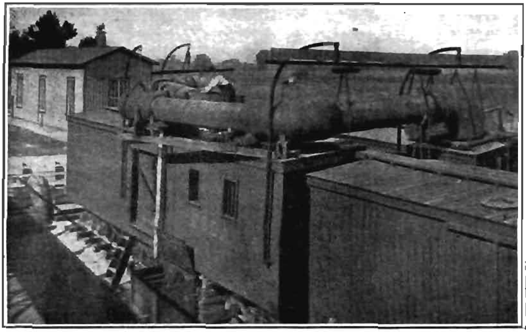


Fig. 1.—General view of pre-cooling car (at the left) containing the machinery and coils for cooling the air which is circulated through the air pipes suspended above to the car of fruit beyond.

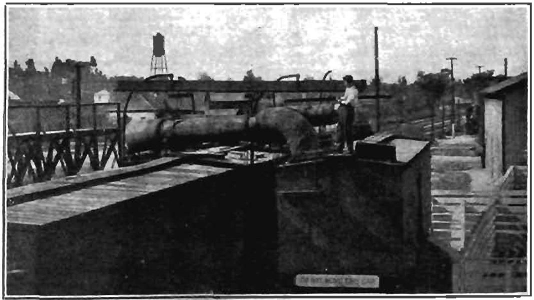


Fig. 2.—View showing the cold air pipes connected to a refrigerator car loaded with fruit.

pre-cooling fruit may be considered as undue repetition, yet as a large number of those interested in the fruit industry in this State are of the opinion that pre-cooling is unnecessary and involves needless expenditure, the subject cannot be dismissed without some added reference to the matter, firstly, to show how essential the prompt application of low temperatures to fruit as soon as possible after harvesting is considered in America; and, secondly, to furnish a basis for suggesting later the system of pre-cooling it may be desirable to adopt in this State. The following extracts are taken from a report in the *Year-Book for* 1910 *of the Department of Agriculture*, U.S.A., furnished by Messrs. A. V. Stubenrauch, Expert in Charge of Fruit Transportation, and S. J. Dennis, Expert in Refrigeration, Bureau of Plant Industry:—

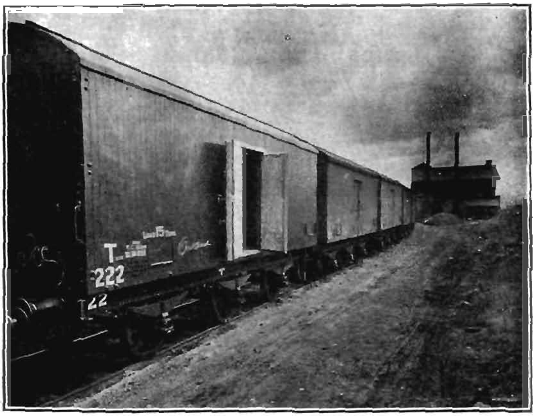


Fig. 3.—Type of insulated car used in Victoria for carriage of fruit.

"The ideal system of pre-cooling for all conditions has not yet been found. While the process has not yet wholly passed the experimental stage, its importance as a means of promoting the safe transportation of fruits for great distances has long been fully recognised, and its use will be extended as rapidly as the principles can be worked out and their practical application under different conditions and to different crops demonstrated. . . .

"A fruit may be considered as a living organism which has a definite span of existence, the length of this span depending upon the conditions surrounding the organism. The most important factor which modifies this span of life is temperature. When the fruit is removed from the parent plant the life processes constituting ripening are materially hastened, and the life span is greatly shortened if the fruit is allowed to remain warm for any considerable length of time.

Hence the importance of reducing the temperature as promptly and rapidly as possible after the fruit is picked. . . .

"The prompt and rapid reduction of the temperature below the point where the decay spores will germinate prevents the development of the disease, and even fruit which has been rendered extremely susceptible through mechanical injury of some kind can be transported with only slight loss from decay when promptly cooled."

Summed up, so far as the experiments have proceeded, these have shown that pre-cooling, although not by itself providing a means for safely transporting fruits over long distances, is still essential for carrying this into effect. This is particularly the case with respect to soft fruits, such as peaches, pears, and plums, and to a lesser degree with regard to apples and other hard fruits. If this is so in America, surely the argument applies with equal force to Victoria, where our average summer temperature is quite as high as that of America.

LOCAL TEMPERATURE EXPERIMENTS.

During the current export season a series of temperature tests have been taken with respect to non-pre-cooled and pre-cooled fruit transported to the seaboard in various types of railway trucks and under differing conditions. In the absence of thermograph installation in the trucks, the temperature at time of loading or the fluctuations of temperature during transit could not be recorded.

NON-PRE-COOLED.

Type of Truck.	Outside Temperature.	Temperature Inside Truck.
Louvre	80 degs. F.	65 to 70 degs. F.
"I"	80 ,,	75 to 78 ,,
"T"	80 ,,	66 degs.
Louvre	90 ,,	75 to 80 degs.
"I"	90 ,,	84 to 90 degs
"T"	90 ,,	70 degs.

PRE-COOLED AT GOVERNMENT COOL STORES, MELBOURNE.

Outside Temperature.	Temperature Inside Truck.	Temperature of Outside Tiers of Fruit.	Temperature in Centre of Load.
—	67.33 degs.	59.33 degs.	61.33 degs.

PRE-COOLED AT COUNTRY COOL STORES.

Outside Temperature.	Temperature Inside Truck.	Temperature of Outside Tiers of Fruit.	Temperature in Centre of Load.
—	67.33 degs. F.	59.33 degs. F.	61.33 degs. F.

In connexion with non-pre-cooled fruit, the records have been taken with respect to (*a*) fruit forwarded in louvre trucks, (*b*) fruit forwarded in "I" trucks, and (*c*) fruit forwarded in insulated "T" trucks. These records show that when pre-cooling is not carried out, the fruit, irrespective of the type of truck or car which may be used, arrives at the ship's side during periods when the outside temperatures are such as to ripen the fruit if exposed to same for a short period after severance from the tree.

Shipments of fruit forwarded without pre-cooling from stations in the country are thus, during the hotter portion of the export season, apparently taken on board exporting vessels at average temperatures of 70 to 90 degrees Fahr. As experiments in this State and in the United States of America have shown that a single case of wrapped apples, if stored at a temperature of 80 to 85 degrees, requires to be stored from 48 to 60 hours before the temperature of the centre rows of fruit in the case can be brought down, under ordinary cool storage conditions, to the necessary 30 to 32 degrees F., it may be imagined the length of time which would be required to cool a shipment of, say, 20,000 to 30,000 cases to the centre of the shipment. When, in addition to this, the facts that hot fruit is sometimes loaded at other ports *en route*, and that the shipping companies often carry the fruit at temperatures much too high, are taken into consideration, some of the reasons for such large percentages of shipments arriving each season on the London and Continental markets in an inferior condition are not far to seek. The matter will be further mentioned later when remedies are suggested for improving our methods of harvesting, handling, and transportation.

Concerning the records taken in connexion with fruit which has been pre-cooled, these were taken with respect to consignments pre-cooled at the Government Cool Stores, Melbourne, and country cool stores, and forwarded to the s.s. *Argyllshire* at Williamstown in ordinary insulated trucks of the "T" type without icing. The records show that, although the fruit forwarded under these conditions arrived at the ship's side at temperatures much nearer the correct ones than the fruit forwarded without pre-cooling, yet the temperatures in connexion with these were much higher than desirable.

As the temperature of the fruit at time of loading averaged from 31 to 32 degrees F., it will be seen that even in the short space of time occupied in the journey from the Government Cool Stores to Williamstown a rapid rise of temperature had taken place. This goes to show that pre-cooled fruit should be conveyed in trucks whose temperature at time of loading is approximately the same as the temperature of the cool chamber from which the fruit has been removed, and that regular icing is necessary to keep the temperature of the car from fluctuating. It appears to support the results of the experiments in America, which have shown that the ideal system of transporting fruit is rapid and prompt pre-cooling, together with transportation in cars under regular icing. Neglect of attention to these matters is probably the reason why much of our fruit when marketed at the other end of the world often presents, according to reports, a shrivelled and wilted appearance.

The results obtained in this State and elsewhere have shown that soft fruits may be kept in cool storage over lengthened periods and

transported over long distances, provided careful and systematic methods of harvesting and prompt application of cool temperatures to the fruit is carried out. The evidence has shown, moreover, that if these methods are neglected, unsatisfactory results will follow. This has been frequently pointed out in the columns of the *Journal* since October, 1907, and also in Bulletins issued by the Department. The following facts in connexion with shipments is submitted as evidence in support of the contention:—

Date.	Vessel.	Kinds of Fruit.	Conditions under which fruit was shipped.	Results as per Agent-General's reports.
14.2.11	*Somerset*	Apples, Pears, Peaches, Plums, Grapes	Pears, Peaches, Plums and Grapes *pre-cooled* at Government Cool Stores. Apples *pre-cooled* in ship's hold prior to loading of soft fruits. Forwarded to ship in insulated cars	Shipment landed in good order, pears averaging 13s. per case
3.2.12	*Themistocles*	Apples, Pears, Peaches, Plums	*Not pre-cooled.* Forwarded in ordinary louvre trucks to ship	Arrived in poor condition and very spotty; in some cases shrivelled and wilted
4.2.12	*Ascanius*	Apples, Pears, Peaches, Plums		
19.2.13	*Somerset*	Apples, Pears, Peaches, Plums	Pears, Peaches, and Plums *pre-cooled* at various cool stores and carried in separate chamber	(As per cabled reports) Pears and plums in excellent condition. Peaches worthless

(*To be continued.*)

MAMMITIS OR GARGET IN DAIRY COWS.

By R. J. de C. Talbot, B.V.Sc.

Mammitis, or inflammation of the udder, is a disease which is very common amongst dairy cows in the State.

It may occur in many forms, and be due to a variety of causes.

If dairy farmers would seriously consider the monetary loss sustained by them every year through temporary or permanent loss of milk due to this disease from one or more of their cows they would discover the amount to be a considerable sum.

It therefore behoves those engaged in the milk producing industry of this State to become alive to the seriousness of this disease and the danger of it becoming a greater scourge than it is at present.

The checking of contagious mammitis and ultimate eradication of it from a herd can only be brought about by care in selection at buying, proper sanitation of milking premises, cleanliness of milking (whether by machines or hand), and isolation and proper treatment of all cows showing symptoms of this disease.

The disease is in most cases capable of being transmitted from one cow to another; that is to say, it is contagious, the degree varying to a considerable extent.

In some forms of contagious mammitis, one cow in a herd may become affected with what might appear to be a simple case of the non-contagious form of the disease, and unless proper precautions are taken, in a very little while a number of the other cows being milked become affected in one or more quarters.

In this case the germs causing the disease have been carried from cow to cow on the hands of the milkers, or, if machines are in use, by the cups.

It will thus be seen that this contagious form of mammitis may become a very serious menace to a dairy farmer, as the milk yield of all cows affected falls away to practically nothing, and very often an attack of the disease is followed by occlusion, or stoppage of the teat duct, and subsequently by the loss of that particular quarter, hence the necessity of early recognition of the disease, isolation of affected animals, and proper methods of treatment.

Causes.

The very structure of the udder favours inflammatory processes; it has a good blood supply, the interior is almost in direct communication with outside influences, and the milk forms an excellent medium for the growth of most bacteria.

Acute inflammation of the udder is most common during the period of lactation; it is very unlikely to occur in a dry cow.

The most common cause of mammitis is the introduction into the udder, by way of the teat duct, of bacteria capable of causing inflammation, and opportunities for infection by this means are frequent.

The severity of the attack depends upon the virulence (or strength) of the germs which gain entrance.

The entrance of these bacteria into the udder is facilitated by milking cows in sheds which are kept in an insanitary condition, or by allowing the animals to stand about in dirty yards prior to milking.

Cows milked by machines which are not frequently sterilized, or by persons with unclean hands, are more liable to infection than those milked under proper hygienic conditions.

The introduction into the teat of improperly sterilized teat syphons, pieces of wire, straws, &c., is a frequent source of infection.

Mammitis may result from a cow not being milked for some time (as occurs in drying off). In this case the disease is caused by the decomposition and growth of bacteria which occurs in the retained milk.

The contagious form of the disease may be carried from cow to cow by means of the cloth which is used to wipe the udder prior to milking, and it is also possible for infection to be carried by flies.

Simple mammitis is sometimes brought about by the vacuum pressure of machines being too severe. This pressure may cause rupture of some of the small blood vessels of the udder.

Acute inflammation may result from some external injury to the udder, such as a stake (due to animal lying on a sharp stick), dog bite, or wound caused by the horn of another cow.

Another form of the disease is that associated with tuberculosis of the udder.

Actinomycotic mammitis which is due to the entrance into the udder of the ray fungus (the cause of lumpy jaw in cattle) appears to be more common in Victoria than in other parts of the world.

Both these latter forms are chronic and incurable, and their diagnosis is so difficult to non-experienced persons that they will not be further mentioned in this article.

SYMPTOMS.

The disease sets in suddenly, and may attack one or more quarters.

Usually the first intimation that anything is wrong is that the milk drawn from a particular quarter contains a few clots; it may also be watery; in a short time the clots become more numerous, and the milk shows a tendency to rapidly coagulate. These changes are always more pronounced in the first milk drawn off.

In mild cases of the disease the alteration in the character of the milk may be the only change which is noticed, and sometimes the disease clears up after a few days, the milk gradually becoming normal again.

In more severe cases the changes in the milk are accompanied by swelling and redness of the affected quarter; it is painful to the touch and abnormally warm; if one of the back quarters is affected, the swelling and pain will interfere with movement and cause lameness; frequently there is an enlargement of the lymph glands situated above and behind the udder.

As the disease advances, the changes in the milk become more pronounced; there is a great diminution in the yield, the quantity gradually becoming less and less. What milk there is, is thick, yellowish, and viscous, due to the fact that it contains a large quantity of pus and sometimes blood. The udder now becomes hard, tense, and swollen. The teat duct appears as though it were choked with some hard substance, and frequently small hard nodules about the size of a pea may be felt at the base of the teat.

In severe and advanced cases, abscesses may form on the lower portions of the udder, and subsequently gangrene may occur. In these latter cases the general health of the animal suffers; it becomes feverish, with a high temperature, the appetite is lost, thirst is excessive, and the animal is depressed. Death sometimes follows these very acute cases.

It should be borne in mind that in some forms of contagious mammitis, practically the only changes to be noted are a slight alteration in the character of the milk, associated with thickening of the lining of the teat duct. These are the cases that are dangerous, because, on account of the apparent lack of symptoms, the disease, if recognised at all, is not treated as serious. The cow is milked as usual, and in a short time, especially if machines are being used, many of the other cows become affected.

TREATMENT.

It is always wise to treat all cases of mammitis as though it were contagious, as in many cases it is.

A soon as a cow is suspected of being affected, she should be isolated.

If milking machines are in use, they should on no account be used on her. She should always be the last cow milked, and, after milking her, the hands of the milker should be well washed in some antiseptic solution (lysol, phenyle).

The milk from affected cows should on no account be milked on to the floor of the milking shed; it should be drawn off into some old dish kept for the purpose, and then thrown on to a fire.

In all cases of mammitis it is very important to withdraw the milk frequently, every hour if possible, and after each milking the udder should be lightly, but thoroughly, massaged to assist the discharge of the secretions from the finer milk ducts. The application of small quantities of camphorated oil during massage assits the operation, and is very beneficial.

In acute cases, fomentations of warm boracic water should be applied frequently, but care should be taken that the water used is not too hot, and the foment should not be allowed to remain on until it is cold. All cloths before being used should be well boiled with washing soda.

In some forms of the disease injections into the udder of boracic acid solution are of great value. The solution is prepared by dissolving a dessertspoonful of pure boracic acid in a pint of boiling rain water, and allowing to cool.

The cow should be thoroughly milked, and the surface of the udder and teats well washed with an antiseptic solution (2 per cent. lysol). About a quarter of a pint of the boracic solution should be injected, into the affected quarters by means of an ordinary enema syringe, the nozzle of which has been replaced by a teat syphon; it is most important that both syphon and syringe should be well boiled both before and after being used on any particular quarter. After injection, the fluid should be allowed to remain in the udder for about a quarter of an hour, during which time the affected quarters should be well massaged. This treatment should be applied twice a day, in conjunction with that already recommended.

In some forms of mammitis, where the teat duct is blocked, a teat syphon may be used to draw off the milk, but the syphon should be boiled in a strong soda solution for at least ten minutes both before and after use, and should never be pushed roughly up the teat. If these precautions are not taken, the syphon will do a great deal more harm than good.

Hairpins, pieces of wire, &c., should not be pushed up the teat for the purpose of making the milk flow.

Owing to the difficulty in differentiating the early stages of contagious mammitis from the non-contagious forms, all cases of the disease should be looked upon with grave suspicion, and, as already stated, isolation and the above-mentioned treatment should be rigidly carried out.

PREVENTIVE TREATMENT.

The occurrence of all forms of this disease (as has already been stated) may be greatly reduced, if not actually prevented, by the adoption of sanitary and hygienic methods of milking.

The milking shed should be situated on high land, so that it can be easily drained. The floor should be so constructed that it is impervious to moisture.

The inside of the shed and all fittings must be kept scrupulously clean, and should be frequently lime-washed. The yard where the cows have to stand prior to being milked should be paved; if this is not possible, it should at least be kept free of all manure, &c.

Before the cows are milked the udders should be well washed, special attention being paid to the teats (after washing, dry well).

The practice of wetting the hands in the pail of milk cannot be too strongly condemned; if the hands are required to be moistened, a small dish of clean water should be kept for this purpose.

Milking machines, if not kept clean, may become a potent factor in the dissemination of infection among the cows. The cups and milk tubes should be boiled before each milking and after being taken off each cow; steam from a jet should be forced through them. *When not in use, they should be kept immersed in mild inodorous antiseptic* solution such as boracic acid. If a steam jet is not available, the cups, after use on each cow, should be plunged into a strong boracic solution and then rinsed in pure water immediately afterwards.

(It is thought by some that boiling the cups, tubes, &c., is liable to perish the rubber, this, however, is not the case if the boiling is carried out carefully.)

Before applying the cups, the milk from each quarter should be examined in order to detect the first noticeable indication of the disease.

On no account should machines be used on affected cows.

Cows that are newly introduced into a herd should be examined, and machines should not be used on them until it is certain that they are free from any disease of the udder.

All suspicious cases should be at once isolated, and treatment should be conducted along the lines already recommended.

RELATION OF FERTILIZERS TO FERTILITY—

In his presidential address to the agricultural section of the Science Congress, Mr. F. B. Guthrie, of Sydney, gave an able *résumé* of present views on this subject. Fertilizers were undoubtedly of benefit in supplying essential constituents of plant food, but their action did not end there. They had an influence, more or less, upon the physical condition of the soil, upon the micro-organisms in the soil, and in altering its chemical balance. Special attention was devoted to the presence *of soil poisons, or toxins, which apparently might affect fertility in at* least an equal degree with a deficiency of plant food. These toxins might be secreted either by the growing plant or by changes, bacterial or otherwise, in the organic matter of the soil. Diseases in man and animals were combated by the discovery of substances which retard their progress, and it might be hoped that substances might be discovered which would render harmless the toxins produced in soils. Different toxins had their anti-toxins, and experiments were quoted showing how phosphoric acid helped to destroy some toxins, nitrate of soda others, and sulphate of potash those of still another class. They might also prevent their formation. Investigation as to the formation, character, and effect of the various soil toxins was pressing upon agricultural scientists, and the belief was expressed that many fertilizers which we now apply to furnish plant food " act less by virtue of any special plant food with which they supply the crop than through their power of retarding or preventing the formation of substances hostile

to plant growth." These considerations affected simply the manner in which manures possibly act; they must "not be taken to suggest that we should cease to manure with the recognised fertilizers."

REPORT ON SECOND EGG-LAYING COMPETITION.

The Second Egg-laying Competition came to a close on the evening of the 14th instant, and the Third was entered upon, when the change of birds was satisfactorily carried out. Appended are the results of the Competition. The prizes offered for competition were won by the following:—

Greatest number of eggs laid by any pen during currency of Competition:—

First prize (£7 7s.).—S. Brown, Gembrook South (white leghorns), 1,468.
Second prize (£5 5s.).—J. E. Bradley, Newport (white leghorns), 1,454.
Third prize (£3 3s.).—E. Waldon, Morwell (white leghorns), 1,413.

Greatest total number of eggs laid by a pen during the first four months of the Competition, terminating on the evening of 14th August (winter test):—

First prize (£4 4s.).—S. Brown (white leghorns), 480.
Second prize (£2 2s.).—G. Edwards, Mentone (white leghorns), 456.

Greatest number of eggs laid by a pen of a class other than that gaining first prize:—

Special prize (£3 3s.).—H. A. Langdon (black orpingtons), 1,245.

Pen from which the eggs realized the highest market value throughout the Competition:—

Special prize (£3 3s.).—S. Brown (£7 14s. 4d. value).

The special prize given for the pen the eggs from which show the greatest average weight per dozen was won by Mr. C. J. Beatty with a pen of white leghorns, which laid 1,353 eggs valued at £7 3s. 7½d., the average weight per dozen eggs laid being 26.92 ounces.

Mr. Chalmers' pen of minorcas laid an egg averaging 29.23 ounces per dozen, but as the number laid, 929, is not 75 per cent. of the number laid by the winning pen, he does not win the prize. The same applies to Mr. F. R. De Garis, who, with leghorns, shows an average weight per dozen of 27.8, but with only a total of 1,078 eggs.

The score shows that, though the winning pen was some distance behind the winning pen of the First Competition, the general average is a considerable advance, there being an increase of ten eggs for each pen over that of last year.

The average market price for eggs was 1s. 3½d. per dozen; the actual market value of the 80,865 eggs laid being £406 12s. 6d.

SUMMARY.

Number of pens ...	60
Number of birds	414
Total number of eggs laid	80,865
Average market value per dozen ...	1s. 3½d.
Market value ...	£406 12s. 6d.
Greatest number of eggs per pen	1,468
Average number per hen, first pen	248
Average number per pen	1171.9
Average number per hen	195.35

Results of the Second Egg-Laying Competition, Burnley, 1912-13.

Pen.	Owner.	Breed.	Total Eggs to Date.	Position in Competition.	Market Value.	Average Weight per Dozen.	Weight of Eggs to Date.
					£ s. d.	Lbs.	Lb.
1	John Campbell ..	White Leghorn ..	1,313	12	6 15 7½	25·02	2,738
2	B. Rowlinson ..	,, ,, ..	1,206	31	6 4 5¼	24·104	2,427¼
3	King and Watson	Black Orpington	1,195	36	6 8 9¼	24·28	2,418½
4	W. L. Blackburn	White Leghorn ..	1,032	56	5 0 10½	24·47	2,105
5	I. H. Brain ..	,, ,, ..	1,301	14	6 10 1¾	22·9	2,484¾
6	*J. B. McArthur* ..	,, ,, ..	1,137	44	5 16 1¼	25·22	2,389¾
7	A. H. Padman ..	,, ,, ..	1,222	28	6 6 1¾	23·1	2,352¾
8	D. Fisher ..	Black Orpington	1,023	58	5 11 3	24·8	2,110
9	J. S. Spotswood ..	White Leghorn ..	1,268	21	6 11 7¼	24·33	2,571½
10	*S. P. Giles* ..	*R.C. Brown Leghorn*	1,201	34	5 18 4¾	23·51	2,353¼
11	T. S. Goodisson ..	Black Orpington	1,060	53	5 0 0½	25·08	2,218½
12	T. H. C. Stafford	White Leghorn ..	1,149	41	5 13 1	24·35	2,338¾
13	W. B. Crellin ..	,, ,, ..	1,296	15	6 9 8¼	24·5	2,646¼
14	J. H. Wright ..	,, ,, ..	1,212	30	6 2 2¼	24·22	2,446¾
15	Mrs. W. H. Steer	,, ,, ..	1,143	42	5 15 3¼	26·18	2,494¼
16	R. Jobling ..	Silver Wyandotte	1,129	45	5 12 8	23·53	2,107½
17	*S. Childs* ..	*White Leghorn* ..	918	66	4 4 1¼	24·72	1,975
18	B. Mitchell ..	,, ,, ..	895	69	4 8 10½	25·71	1,901
19	Cowan Bros. ..	,, ,, ..	1,205	32	6 1 0¾	24·27	2,438¼
20	E. Waldon ..	,, ,, ..	1,413	3	7 6 9¼	25·4	2,831
21	J. O'Loughlin ..	,, ,, ..	990	60	4 15 5¼	26·82	2,213½
22	W. N. Ling ..	,, ,, ..	933	61	4 8 11½	26·23	2,039¾
23	W. McLister ..	,, ,, ..	1,363	4	7 4 0	24·04	2,731½
24	C. J. Chandler ..	,, ,, ..	1,238	27	6 7 0½	25·07	2,587
25	R. L. Appleford ..	,, ,, ..	1,362	5	6 18 6¼	22·76	2,695¾
26	(Reserved)						
27	E. C. Nash ..	White Leghorn ..	1,052	54	5 4 1¾	25·81	2,263
28	F. G. Eagleton ..	,, ,, ..	1,348	9	7 1 1¼	24·25	2,725¼
29	J. B. Brigden ..	,, ,, ..	1,253	23	6 7 11¼	21·45	2,240½
30	*Mrs. H. Stevenson*	,, ,, ..	1,079	50	5 11 11	25·61	2,303½
31	George Edwards ..	,, ,, ..	1,349	8	7 0 7¾	25·0	2,811½
32	S. Brundrett ..	,, ,, ..	1,204	33	5 16 0¾	25·32	2,541½
33	H. McKenzie ..	,, ,, ..	1,362	5	6 17 9¾	23·82	2,704¼
34	*R. F. B. Moore* ..	,, ,, ..	913	67	4 4 2	26·37	2,007¼
35	C. H. Busst ..	,, ,, ..	1,167	37	5 17 8¼	25·35	2,466
36	K. J. Barrett ..	Old English Game	902	68	4 7 9¼	21·88	1,648½
37	C. B. Bertelsmeier	White Leghorn ..	1,274	20	6 9 2	24·17	2,567½
38	R. Moy ..	,, ,, ..	1,275	19	6 10 8	24·77	2,631¾
39	W. G. Swift ..	,, ,, ..	1,334	10	6 16 6	24·44	2,718¾
40	S. Brown ..	,, ,, ..	1,468	1	7 14 4	24·84	3,043½
41	A. Stringer ..	,, ,, ..	1,028	57	5 0 0	24·61	2,109¼
42	Mrs. T. E. Kempster	,, ,, ..	1,159	38	5 16 6¼	25·48	2,462¼
43	G. Purton ..	,, ,, ..	1,123	46	5 11 4½	25·78	2,413½
44	A. W. Hall ..	,, ,, ..	1,264	22	6 10 2¾	24·7	2,602
45	Wooldridge Bros.	,, ,, ..	1,328	11	6 16 0¾	24·01	2,656¾
46	H. A. Langdon ..	Black Orpington	1,245	24	6 11 1¼	23·57	2,446
47	J. E. Bradley ..	White Leghorn .	1,454	2	7 12 1¾	25·55	3,096¼
48	Griffin Gant ..	,, ,, ..	1,243	25	6 9 6¾	24·04	2,491¼
49	W. Purvis ..	,, ,, ..	1,292	16	6 10 10¼	23·11	2,488¼
50	A. Ahpee ..	,, ,, ..	1,218	29	6 4 11	25·11	2,548¾
51	H. Hammill ..	,, ,, ..	1,151	40	5 14 2½	24·68	2,368½
52	Chalmers Bros. ..	Black Minorcas ..	929	64	4 2 0¼	29·23	2,262¾
53	H. Hodges ..	White Leghorn ..	1,279	18	6 7 6¼	24·59	2,620¾
54	*F. R. DeGaris* ..	,, ,, ..	1,078	51	5 7 1½	27·8	2,498½
55	Jas. Matheson ..	Brown Leghorn ..	1,088	49	5 5 7	24·54	2,225½
56	M. A. Monk ..	White Leghorn ..	1,096	48	5 10 4	25·55	2,334½
57	B. Walker ..	,, ,, ..	1,139	43	5 11 5¼	24·51	2,327½
58	W. J. Stock ..	,, ,, ..	931	62	4 12 6¾	23·0	1,784¾
59	W. Seabridge ..	,, ,, ..	922	65	4 8 5½	26·08	2,004
60	Miss B. E. Ryan	,, ,, ..	1,078	51	5 6 0	24·66	2,216½
61	Jas. Ogden ..	Black Orpington	1,242	26	6 4 2	23·2	2,402¼
62	*R. W. Pope* ..	*White Leghorn* ..	1,311	13	6 13 10¾	23·76	2,594¾
63	Percy Walker ..	,, ,, ..	1,283	17	6 10 3¾	24·91	2,663¾
64	H. Merrick ..	,, ,, ..	1,158	39	5 15 10¾	25·25	2,436¾
65	A. Thompson ..	,, ,, ..	1,118	47	5 9 4½	25·37	2,364¼
66	J. Moloney ..	,, ,, ..	1,052	54	4 19 9	26·16	2,297
67	A. E. Manning ..	Ancona ..	931	62	4 6 3½	24·06	1,949¾
68	W. J. McKeddie	White Leghorn ..	992	59	4 15 4½	24·27	2,007¼
69	Morgan and Watson	,, ,, ..	1,196	35	5 15 7	25·24	2,516½
70	C. J. Beatty ..	,, ,, ..	1,353	7	7 3 7½	26·02	3,036½
		Totals ..	80,865	..	406 12 6	..	..

ORCHARD AND GARDEN NOTES.

E. E. Pescott, F.R.H.S., Principal, School of Horticulture, Burnley.

The Orchard.

Manuring.

The expediency of adding food supplies to the soil will now come under the consideration of the fruit-grower. It is not wise to recommend any general manure, as soil and climatic conditions vary considerably throughout the State. Humus in the form of any decayed animal or vegetable matter may now be added, and it will prove beneficial and reproductive. Lime may also be applied at this time. The dominant influence of lime will always be felt in a beneficial manner in orchards, provided it be not used too frequently.

It is far more important, however that the soil be placed in a perfect physical condition by draining, subsoiling, and thorough cultivation, so that the tree roots may derive the greatest possible benefit from the soil itself. Then, when that is done, the grower may turn to soil additions as a further means of increasing his yield.

Manuring, except with quick-acting manures such as nitrate of soda and potash and sulphate of ammonia, should be carried out in the autumn, and preferably before the autumn ploughing. There are several methods by which the soil may be enriched for orchard trees; humus may be added in the form of animal manures, green manures, plant or animal refuse; the trees may be stimulated by a chemical plant food; or the food in the soil may be released by the application of lime in one of its many forms. Whatever method is selected, it is wise to adopt a regular system of rotation, so that the soil may be assisted and enriched in a different manner each year, and so that it may not be over-stocked with any one particular form of tree food.

Pests.

Orchards will benefit if an attack is now made upon the codlin moth. All hiding places, nooks and crannies, wherever the larvæ have hidden, should be thoroughly searched and cleaned out. The orchardist has far more time now to do this work than he will have in the springtime.

It is now a favorable time to spray the trees where such pests as Bryobia mite, woolly aphis, scale species, and peach aphis have been or are prevalent.

Any of the recognised sprays are suitable, these being red oil, crude petroleum, kerosene emulsion, or lime-sulphur wash. The latter wash is again becoming popular, partly owing to its effectiveness, and also to its possessing certain properties as a fungicide.

Flower Garden.

The month of May is a suitable one for the preparation of new flower beds. In starting on this important work, the first essential

is good drainage. The fertility of the soil depends so much on its ability to free itself of all surplus and unnecessary water by being in a good mechanical condition. This is of far greater importance than increasing the value of the soil by the addition of organic manures. The latter is by no means to be despised, but a correct condition with good drainage is the first necessity.

The new beds should be well trenched into the clay, or the subsoil. It is not advocated that the trenching shall be excessively deep. Much labour has been lost in the past by deep trenching, and no very definite results have been produced.

The subsoil surface should be trenched so that the soil moisture may soak into it, and so that the plant roots may be able to penetrate into the subsoil. Then the surface soil and loam should be thoroughly cultivated and broken up. These remarks apply especially to the preparation of rose beds. If new ground is being broken up, the addition of from 4 to 5 cwt. of lime will be a distinct advantage. The lime should be well worked into the soil. The addition of stable manures to the soil may now be carried out. Too heavy dressings are not advised, as an accumulation of manure in the soil is likely to set up sour and unhealthy conditions. The manure should be thoroughly mixed with the soil.

It is not too late to sow sweet pea seeds, but the best results come from early planting. The planting of these seeds should not be delayed. Better results will be obtained if the seeds are sown in boxes, pots, or seed beds, and planted out when the young plants are 2 or 3 inches high. The crown should be pinched out at transplanting, so that the plant will "stool" or branch out better.

At the end of the month a start may be made with the autumn digging, pruning, and clearing up. Manure may be dug into the beds, well below the surface. All leaves and light litter should also be dug in. If necessary, a light top dressing of lime may be given after the digging has been completed.

As much garden litter as can be saved should be rotted down for future use; the rough litter and strong stems should be burned, and the ashes returned to the soil.

Flowering shrubs should be pruned only after flowering season of each plant has passed.

By this time all bulbs and tubers for spring flowering will be planted, and in many instances these are above ground. They should be protected from the ravages of slugs, snails, and other pests. Summer flowering bulbs and allied plants, such as iris and lilium, may now be planted.

Chrysanthemums, delphiniums, dahlias, perennial phlox, polygonum, and other herbaceous perennials may now be cut down, and if necessary lifted for storing

Rose cuttings may now be planted, and Iceland poppies and pansies should be planted out from the seed beds.

Vegetable Garden.

The remarks in the flower garden notes referring to preparation of new beds also apply to the kitchen section; this being the time for good soil work. Only where deep-rooting vegetables are to be grown,

such as carrots and turnips, the soil and subsoil should be deeply worked so as to allow a ready root run for these vegetables.

A dressing of lime will be of great value in every section of the kitchen garden. This will especially help to minimize future attacks of insect and fungus pests.

All asparagus plots should be cleaned out, cut down, and kept in good order. A light dressing of stable manure may be given to the beds.

Plantings may be made of all seedlings, such as cabbage, cauliflower, lettuce, onions, &c.; and seeds of carrot, leek, lettuce, onion, peas, radish, turnip, parsnip, broad beans, &c., may be sown.

STATISTICS.

The Victorian Wheat Harvest.

Mr. A. M. Laughton, Government Statist, has issued the following return, showing the actual area under crop and the yield of wheat for the seasons 1911-12 and 1912-13:—

Counties Geographically Arranged.	Area in Acres.		Produce in Bushels.		Average per Acre in Bushels.	
	1911-12.	1912-13.	1911-12.	1912-13.	1911-12.	1912-13.
Grant	17,565	12,418	183,982	207,918	10·47	16·74
Talbot	14,751	11,973	162,168	196,709	10·99	16·43
Grenville ..	43,657	40,443	516,402	789,824	11·83	19·53
Hampden ..	20,333	24,045	195,258	463,289	9·60	19·27
Ripon	68,162	83,636	554,715	1,669,259	8·14	19·96
Lowan	160,384	143,314	1,592,602	1,962,154	9·93	13·69
Borung	315,468	274,956	3,760,294	4,072,629	11·92	14·81
Kara Kara ..	127,289	114,260	1,541,418	1,679,804	12·11	14·70
Weeah	66,332	91,188	328,113	914,922	4·95	10·03
Karkarooc ..	332,984	376,389	1,943,436	2,851,867	5·84	7·58
Tatchera ..	217,603	236,672	1,410,192	1,664,955	6·48	7·03
Gunbower ..	38,351	35,888	380,245	378,181	9·91	10·54
Gladstone ..	122,830	100,424	1,428,613	1,305,528	11·63	13·00
Bendigo ..	128,601	117,363	1,571,500	1,686,702	12·22	14·37
Rodney ..	124,905	115,776	1,436,022	1,690,814	11·50	14·60
Moira	279,761	229,836	3,028,612	3,337,746	10·83	14·52
Delatite.. ..	12,316	11,986	123,713	234,018	10·04	19·52
Bogong ..	41,714	35,595	400,242	571,526	9·59	16·06
Remainng counties	31,060	29,054	334,350	545,259	10·76	18·77
Cut for grain ..	2,164,066	2,085,216	..	..	..	..
Cut for hay ..	304,388	386,370	..	..	..	..
Total ..	2,468,454	2,471,586	20,891,877	26,223,104	9·65	12·58

Note.—The requirements for seed and consumption in 1913 are estimated at 9,000,000 bushels.

Rainfall in Victoria.—First Quarter, 1913.

TABLE showing average amount of rainfall in each of the 26 Basins or Regions constituting the State of Victoria for each month and the quarter, with the corresponding monthly and quarterly averages for each Basin, deduced from all the available records to date.

Basin or District.	January.		February.		March.		Quarter.	
	Total.	Average.	Total.	Average.	Total.	Average.	Total.	Average.
	points.	points.	points.	points.	points.	points.	points.	points.
Glenelg and Wannon Rivers	40	115	127	110	306	168	473	393
Fitzroy, Eumerella, and Merri Rivers	57	137	113	181	363	186	533	504
Hopkins River and Mount Emu Creek	45	139	166	132	342	190	553	461
Mount Elephant and Lake Corangamite	35	144	212	125	479	202	726	471
Cape Otway Forest ...	83	202	137	170	627	290	847	662
Moorabool and Barwon Rivers	33	143	165	130	637	203	835	476
Werribee and Saltwater Rivers	26	142	89	146	597	215	712	503
Yarra River and Dandenong Creek	63	222	110	192	644	306	817	720
Koo-wee-rup Swamp ...	46	233	103	166	720	296	869	695
South Gippsland	78	235	93	175	686	326	857	736
Latrobe and Thomson Rivers	77	241	144	173	697	297	918	711
Macallister and Avon Rivers	44	183	76	150	778	217	898	550
Mitchell River	35	268	71	217	766	235	872	720
Tambo and Nicholson Rivers	34	235	85	171	810	300	929	706
Snowy River	72	303	151	223	930	299	1,153	825
Murray River	102	119	87	119	450	164	639	402
Mitta Mitta and Kiewa Rivers	179	178	131	161	787	307	1,097	646
Ovens River	185	180	148	161	608	286	941	627
Goulburn River	79	141	126	120	488	185	693	446
Campaspe River	20	116	152	133	422	168	594	417
Loddon River	12	93	139	112	378	132	529	337
Avon and Richardson Rivers	3	68	61	96	245	115	309	279
Avoca River	6	69	93	89	277	126	376	284
Eastern Wimmera	9	81	138	115	227	152	374	348
Western Wimmera	12	63	162	82	152	112	326	257
Mallee District	10	55	55	89	304	99	369	243
The whole State	48	136	116	128	550	184	714	448

N.B.—100 points = 1 inch.

H. A. HUNT,

Commonwealth Meteorologist.

Perishable and Frozen Produce.

Description of Produce.		Exports from State.		Deliveries from Government Cool Stores	
		Quarter ended 31.3.13.	Quarter ended 31.3.12.	Quarter ended 31.3.13.	Quarter ended 31.3.12.
Butter	lbs.	9,044,252	12,066,660	9,783,872	13,309,016
Milk (dried) ...	cases	2,171	1,203	..	..
Milk (concd.)	"	1,032	2,899	.	10
Cheese	lbs.	30,600	34,440	21,240	17,850
Ham and Bacon ...	"	8,640	102,720	...	.
Poultry . . .	head	2,130	4,170	182	2,923
Eggs...	dozen	..	..	2,724	8,182
Mutton and Lamb	carcases	380,817	436,564	3,913	13,078
Beef	quarters	12,732	8,041	284	232
Veal	carcases	930	1,075	13	13
Pork...	"	..	2,319	156	1,134
Rabbits and Hares ...	pairs	272,964	153 676	151,063	86,984
Sundries ..	lbs.		...	63,675	24,393

R. CROWE, *Exports Superintendent.*

Fruit, Plants, Bulbs, Grain, &c.

Imports and Exports Inspected for Quarter ending 31/3/13.

Description of Goods.	Imports.		Exports.	Description of Goods.	Imports.		Exports.
	Inter-State.	Oversea.	Oversea.		Inter-State.	Oversea.	Oversea
pples	415	—	235,548	Logs	29	2,502	—
ricots	1,621	—	28	Linseed ...	—	210	—
nanas, bunches	56.337	19,612		Mangoes	14	—	—
nanas, cases ..	5,523	15,049	—	Melons	4	. .	—
rley	123,863	9,197	—	Nutmegs ..	—	242	—
ans	84	791	—	Nuts	102	3,217	—
ackberries ...	466	—	—	Oats	6,890	1,394	—
ack Currants ...	241	—	—	Onions	176	—	—
lbs	20	160	22	Oranges	27,454	7,684	—
erries	2	—	165	Passion Fruit ...	824	—	—
illies	—	211	—	Peaches	3	—	79
coa beans ..	—	806	—	Pears	4	—	40,683
coanuts ..	171	—	—	Peas, dried ...	1,053	185	—
ffee beans .	—	1,041	—	Pepper	—	171	—
pra	—	1,267	—	Persimmons ...	99	—	—
cumbers ...	132		—	Pineapples .	22,363	—	361
tes	—	6,705	—	Plants, Trees, &c...	68	363	3
uit—				Plums	4	—	660
Canned ...	—	—	1,871	Potatoes ..	23	1	1,693
Dried ..	1	1,520	188	Quinces	—	-	40
Mixed ..	19	172		Raspberries ...	46		—
apes	7	—	106	Rice . ..	4,078	19,360	—
oseberries ...	101	—	—	Seeds	1,461	12,156	46
een Ginger ...	—	791	—	Spice	—	211	—
y	—	75	—	Tomatoes ..	336	—	32
ops		1,415	—	Vegetables ..	564	284	—
ms, Sauces, &c. ..	—	—	1,020	Wheat, Grain, &c...	223	30	—
mons ...	—	7,671	—	Yams	6	4	—
ntils	—	79	—				
				Grand Totals ...	254,827	114,576	282,545

Total number of packages inspected for quarter ending 31st March, 1913 = 651,948.

E. MEEKING, ***Senior Fruit Inspector.***

REMINDERS FOR JUNE.

LIVE STOCK.

HORSES.—Those stabled can be fed liberally. Those doing fast or heavy work should be clipped; if not wholly, then trace high. Those not rugged on coming into the stable at night should be wiped down and in half-an-hour's time rugged or covered with bags until the coat is dry. Old horses and weaned foals should be given crushed oats. Grass-fed working horses should be given hay or straw, if there is no old grass, to counteract the purging effects of the young growth. Old and badly-conditioned horses should be given some boiled barley.

CATTLE.—Cows, if not housed, should be rugged. Rugs should be removed in the daytime when the shade temperature reaches 60 degrees. Give a ration of hay or straw, whole or chaffed, to counteract the purging effects of young grass. Cows about to calve, if over fat, should be put into a paddock in which the feed is not too abundant. Calves should be kept in warm dry shed. Cows and heifers for early autumn calving may be put to the bull.

PIGS.—Supply plenty of bedding in warm, well-ventilated styes. Keep styes clean and dry. Store pigs should be placed in fattening styes. Sows in fine weather should be given a grass run. Young pigs over two months old should be removed from lucerne run.

SHEEP.—Feed being plentiful, ewes should mother their lambs well. Lambs and dry ewes should therefore be in good order and sell well during the winter. Lambs born early from roomy merino ewes (especially if by good Leicester rams) should soon be ready in northern areas and sell well from now on, when up to 45 to 50 pounds live weight. Maintain supply of milk producing grass for all ewes with lambs, this being a most critical stage.

POULTRY.—Forward pullets should now be placed in winter scratching shed, fed liberally, and given fresh water daily. Supplies of shell, grit, and charcoal should always be available. Rest the breeding pens; dig them up and sprinkle lime throughout. Sow a mixture of English grass and clover; this not only removes taint in soil, but provides excellent green fodder for stock. Where possible, lucerne should now be sown for summer feed. Meat (cooked) and maize are aids to egg production during cold weather. Feed hot mash at daybreak. Clean drains.

CULTIVATION.

FARMS.—Plough potato land. Land to be sown later on with potatoes, mangolds, maize, and millet should be manured and well worked. Sow malting barley and finish sowing of cereals. Lift and store mangolds, turnips, &c. Clean out drains and water furrows. Clean up and stack manure in heaps protected from the weather.

ORCHARD.—Finish ploughing; plant young trees; spray with red oil or petroleum for scales, mites, aphis, &c.; carry out drainage system; clean out drains; commence pruning.

VEGETABLE GARDEN.—Prepare beds for crops; cultivate deeply; practise rotation in planting out; renovate asparagus beds; plant out all seedlings; sow radish, peas, broad beans, leeks, spinach, lettuce, carrot, &c.; plant rhubarb.

FLOWER GARDEN.—Continue digging and manuring; dig all weeds and leafy growths; plant out shrubs, roses, &c.; plant rose cuttings; prune deciduous trees and shrubs; sow sweet peas and plant out seedlings.

VINEYARD.—Thoroughly prepare for plantation land already subsoiled for the purpose. Remember that the freer it is kept from weeds from this forward, the less trouble will there be from cut-worms next spring. Pruning and ploughing should be actively proceeded with. In northern districts plough to a depth of seven or eight inches. Manures should be applied as early as possible.

Cellar.—Rack all wines which have not been previously dealt with. Fortify sweet wines to full strength.